BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 31 1947

DENTAL CONDITION OF FIVE-YEAR-OLD CHILDREN IN INSTITUTIONS AND PRIVATE SCHOOLS COMPARED WITH L.C.C. SCHOOLS

BY

HELEN COUMOULOS, Ph.D.Camb., D.D.S.Athens

AND

MAY MELLANBY

with the assistance of Irene Allen

From time to time in the literature the dental condition of various races, social classes, types of school, and so on is compared. If the differences observed are so big that they are self-evident—as, for instance, the difference in caries incidence between children in Great Britain and children of certain native races living in their natural habitat—the criteria used in assessing these differences are for many purposes perhaps not of great importance. Should the discrepancies be less outstanding, however, it is essential that the same standards and the same age groups should be used in the examination of each race, class, or school if true comparisons are to be made. This is especially necessary if the effect of specific procedures or dietary factors is being put to the test.

It is, we believe, unfortunate that the majority of workers, when investigating the dental condition of groups of people, concentrate only on caries incidence and sometimes its extent, ignoring the structure of the teeth, or, if they consider it at all, recognizing only one type of defect —that to which we and our colleagues refer as gross or G-hypoplasia. Thus valuable data are lost.

It is often stated that children brought up in institutions have less caries than their contemporaries living in their own homes. As we had had long experience in examining and charting the deciduous teeth of children attending public elementary schools, using the same standards throughout (Mellanby and Coumoulos, 1944, 1946; Coumoulos, 1946), and had accumulated much information on the subject, we determined in 1945 to see for ourselves how the dental condition of institutional children compared with that of some other sections of the community of the same age groups. During the same period we also made a study of children living at home and attending private schools, and in this paper we shall compare in some detail the findings in the 5-year-old children of these two groups with each other and with data obtained from children of similar age residing usually in their own homes and attending L.C.C. schools in the same year. Details of this last group have already been published (Mellanby and Coumoulos, 1946).

In the present study we use the term "institutions" to cover communal homes for children deprived of a normal home life for one reason or another, such as destitution, illegitimacy, or the death of one or both parents. Some of the institutions visited in the course of the investigation were run by municipal or education authorities, others by religious or charitable organizations. The selection was made as representative as possible, and for this we have to thank Dr. H. E. Magee, of the Ministry of Health.

The majority of the children in the institutions were from poor or unsatisfactory homes. The private schools ranged from the small "select" type to larger ones attached to senior schools, and, so far as could be judged from information supplied, most of the children attending them came from well-to-do families. Many of the children attending the L.C.C. schools were of poor parentage, although some were of a higher social grade. The method of examination and the criteria used in the assessment of dental structure, caries, and other conditions have been described previously (Mellanby and Coumoulos, 1946, and earlier publications by M. M. and colleagues).

Results

A comparison of the findings in the three surveys under review is given in Tables I to VIII. Table I indicates that comparatively few teeth were missing, either shed or extracted, from any of the groups of children. Our chief concern was with the structure of the *deciduous teeth* and their caries incidence and extent rather than with the state of the teeth per child; but before considering these points in detail mention may be made of the percentages of *children* found to be free or almost free from caries (see Mellanby and Coumoulos, 1946). Table II shows that the institutions had a larger percentage (66.1) in this category than the private schools (54.7), which in turn showed a great advance on the L.C.C. schools (28.1).

TABLE I.—*Percentages of Teeth Present at Time of Inspection*

Type of Tooth	Institutions	Private Schools	L.C.C. Schools
Upper:			
Centrals	94·0	93·5	92·6
Laterals	97·8	99·2	98·3
Canines	99·8	100·0	99·6
1st molars	99·5	98·2	95·0
2nd molars	99·8	99·5	97·5
Lower:			
Centrals	85·7	76·0	79·4
Laterals	98·5	97·4	98·0
Canines	100·0	99·9	99·9
1st molars	98·6	95·4	92·4
2nd molars	99·2	98·4	91·7
All types	97·3	95·8	94·4

TABLE II.—*Percentages of Children Caries-free or Almost Caries-free*

Place of Investigation	No. of Children Examined	Caries-free	Almost Caries-free	Total
Institutions	325	57·2	8·9	66·1
Private schools	371	50·4	4·3	54·7
L.C.C. schools	691	24·2	3·9	28·1

In dealing with the individual types of teeth and with the teeth as a whole, the surface structure will be mentioned first, as we consider this to be very important in relation to their resistance to caries.

Surface Structure of the Teeth

As is seen from Table III, the children attending private schools had many more teeth graded as Hy_0—that is to say, of good structure (54%)—than either those attending the L.C.C. schools (38%) or those living in institutions (32.3%). In other words, structure was by far the best in the private schools and was worst in the institutions. As would be expected, when each individual type of tooth was considered, the children at private schools were consistently at the head of the scale, and those attending L.C.C. schools were in most cases better than those residing in institutions.

The proportion of teeth showing some degree of M-hypoplasia was least in the private schools group (44.3%) and much higher in the institutions (62.1%) and L.C.C. schools (59.1%). Comparatively few in any group showed severe M-hypoplasia ($M\text{-}Hy_3$): taking all types together, the private schools had 1.2%, the institutions 1.7%, and the L.C.C. schools 3.5%.

Gross hypoplasia (G-Hy) was negligible compared with M-hypoplasia. The institutions had 4.8% showing this condition compared with 62.1% with M-hypoplasia, the L.C.C. schools 2.3% compared with 59.1%, and the private schools only 1.3% compared with 44.2%. These figures for gross hypoplasia correspond roughly to the figures usually given in the textbooks for all generally recognized hypoplasias (Pitts, 1921; Ainsworth and Young, 1925). Taking individual types of teeth, the highest percentages with gross hypoplasia were found in the lower molars of the institutional children, 10.3% of the first and 10.5% of the second molars being affected, whereas the figures for private and L.C.C. schools ranged from 1.1 to 2.6% for the same types of teeth.

The average hypoplasia figure (AHF), which relates only to M-hypoplasia (see Mellanby and Coumoulos, 1946) and gives a rough computation of the extent of this imperfection, was lowest for all types of teeth together in the private schools, but was approximately the same for the other two groups—that is, 0.6 in the private schools compared with 0.92 in the institutions and 0.91 in the L.C.C. schools. Again, the AHF for each type of tooth was lower for the private schools group than for either of the others, which varied slightly from tooth to tooth. In all groups the lower incisors had the smallest AHF and second molars the greatest—a fact which has been observed in all investigations where the same standards have been used in the assessment of structural defects in deciduous teeth.

TABLE III.—*Comparison of Tooth Structure in Institutions, Private Schools, and L.C.C. Schools*

Type of Tooth	Place of Investigation	Total No. of Teeth Examined for Structure	Hy_0	$M\text{-}Hy_1$	$M\text{-}Hy_2$	$M\text{-}Hy_3$	G-Hy	Hy Unclassified	AHF*
Upper:			%	%	%	%	%	%	
Centrals	Institutions	609	32·2	39·2	20·5	1·6	6·2	0·2	0·91
	Private schools	**689**	**51·8**	**30·9**	**14·2**	**0·6**	**2·5**	**0·0**	**0·63**
	L.C.C. schools	*1,262*	*25·0*	*36·2*	*26·1*	*6·0*	*6·6*	*0·2*	*1·14*
Laterals	Institutions	635	32·9	53·5	8·3	0·5	4·6	0·2	0·75
	Private schools	**722**	**64·4**	**26·3**	**6·5**	**0·9**	**1·8**	**0·4**	**0·42**
	L.C.C. schools	*1,341*	*38·6*	*39·4*	*14·3*	*2·2*	*5·4*	*0·1*	*0·79*
Canines	Institutions	647	30·0	57·2	9·1	0·5	1·4	1·9	0·79
	Private schools	**735**	**63·8**	**31·2**	**3·3**	**0·3**	**1·0**	**0·5**	**0·39**
	L.C.C. schools	*1,369*	*40·8*	*45·7*	*10·1*	*1·1*	*1·1*	*1·2*	*0·71*
1st molars	Institutions	639	7·7	36·9	46·6	2·7	6·1	0·0	1·47
	Private schools	**725**	**24·8**	**47·2**	**23·2**	**2·9**	**1·9**	**0·0**	**1·04**
	L.C.C. schools	*1,282*	*8·7*	*39·2*	*42·9*	*6·4*	*2·8*	*0·0*	*1·48*
2nd molars	Institutions	644	6·2	32·6	51·7	5·4	4·0	0·0	1·59
	Private schools	**736**	**19·8**	**51·4**	**24·9**	**2·8**	**1·1**	**0·0**	**1·11**
	L.C.C. schools	*1,342*	*5·2*	*39·5*	*45·7*	*8·6*	*1·0*	*0·0*	*1·58*
Lower:									
Centrals	Institutions	552	78·1	20·5	0·4	0·0	1·1	0·0	0·21
	Private schools	**559**	**92·5**	**7·1**	**0·2**	**0·0**	**0·2**	**0·0**	**0·08**
	L.C.C. schools	*1,097*	*85·1*	*14·0*	*0·4*	*0·0*	*0·5*	*0·0*	*0·15*
Laterals	Institutions	636	66·8	31·3	0·8	0·0	1·1	0·0	0·33
	Private schools	**718**	**87·9**	**11·1**	**0·4**	**0·0**	**0·4**	**0·1**	**0·12**
	L.C.C. schools	*1,348*	*79·5*	*19·2*	*0·8*	*0·0*	*0·3*	*0·1*	*0·21*
Canines	Institutions	647	50·1	40·2	2·2	0·0	2·3	5·3	0·48
	Private schools	**736**	**81·8**	**13·7**	**1·6**	**0·0**	**0·7**	**2·2**	**0·18**
	L.C.C. schools	*1,370*	*69·7*	*23·5*	*2·3*	*0·1*	*0·7*	*3·8*	*0·30*
1st molars	Institutions	631	16·6	40·4	30·7	1·9	10·3	0·0	1·20
	Private schools	**698**	**37·0**	**41·5**	**18·1**	**2·1**	**1·1**	**0·1**	**0·85**
	L.C.C. schools	*1,235*	*22·3*	*39·6*	*32·5*	*3·1*	*2·6*	*0·0*	*1·17*
2nd molars	Institutions	637	8·8	40·0	36·4	4·2	10·6	0·0	1·40
	Private schools	**718**	**24·2**	**44·6**	**26·7**	**2·8**	**1·7**	**0·0**	**1·08**
	L.C.C. schools	*1,241*	*7·5*	*37·5*	*45·4*	*8·1*	*1·5*	*0·0*	*1·55*
Totals	Institutions	6,277	32·3	39·5	20·9	1·7	4·8	0·8	0·92
	Private schools	**7,036**	**54·0**	**31·0**	**12·1**	*1·2*	**1·3**	**0·4**	**0·60**
	L.C.C. schools	*12,887*	*38·0*	*33·6*	*22·0*	*3·5*	*2·3*	*0·6*	*0·91*

* AHF (average hypoplasia figure) = $\frac{\text{Total hypoplasia figure}}{\text{Total no. of teeth examined for structure (excluding those with G-hypoplasia or unclassified hypoplasia)}}$

Incidence and Extent of Caries

When we turn to the subject of caries quite a different picture is presented. As is shown in Table IV, the percentage of carious teeth of all types together was somewhat lower in the institutions than in the private schools, in spite of the fact that the structure of the teeth was so much worse, and much lower than in the L.C.C. schools, the respective figures being 10.5%, 14.2%, and 26.5%. In general, the same relation was evident between the three groups when each type of tooth was considered separately. As is usually found, in all three groups the lower incisors were rarely carious, only 2.1% or less in any group coming into this category, and the highest incidence occurred in the second molars, the lower teeth of this type being worse

than the upper. In the institutions 26.3%, in the private schools 34.9%, and in the L.C.C. schools 58.8% of the lower second molars were carious.

Just as comparatively few teeth in any group were severely affected by M-hypoplasia, so few showed severe caries, only 8.3% or less of the teeth in any group being in this category (C_3). The lowest incidence of this grade was found among the institutional children—that is to say, in those with teeth of the worst structure—and the greatest incidence among those attending the L.C.C. schools. (It should be noted that this category, as in previous investigations, includes the relatively few missing canines and molars, which are assumed at the age of 5 years to have been extracted for caries—see figures in brackets in Table IV.)

TABLE IV.—*Caries Incidence and Extent in Institutions, Private Schools, and L.C.C. Schools*

Type of Tooth	Place of Investigation	Total No. of Teeth	C_0	C_1	C_2	C_3	Total Carious Teeth	ACF†
			%	%	%	%	%	
Upper:								
Centrals	Institutions	611	89·7	2·3	6·2	1·8	10·3	0·20
	Private schools	**694**	**88·8**	**3·0**	**6·5**	**1·7**	**11·2**	**0·21**
	L.C.C. schools	*1,280*	*70·5*	*5·0*	*17·2*	*7·3*	*29·5*	*0·61*
Laterals	Institutions	636	95·0	1·3	3·5	0·3	5·0	0·09
	Private schools	**736**	**94·2**	**2·4**	**2·7**	**0·7**	**5·8**	**0·10**
	L.C.C. schools	*1,358*	*85·1*	*3·2*	*8·6*	*3·1*	*14·9*	*0·30*
Canines	Institutions	650	97·1	0·3	2·3	0·3 (0·15)*	2·9	0·06
	Private schools	**742**	**95·8**	**1·6**	**1·9**	**0·7 (0·0)***	**4·2**	**0·07**
	L.C.C. schools	*1,381*	*92·5*	*1·7*	*4·2*	*1·6 (0·4)**	*7·5*	*0·15*
1st molars	Institutions	650	86·3	5·7	5·5	2·5 (0·5)*	13·7	0·24
	Private schools	*742*	**79·8**	**4·7**	**9·7**	**5·8 (1·8)***	**20·2**	**0·42**
	L.C.C. schools	*1,382*	*61·1*	*8·3*	*17·4*	*13·2 (5·0)**	*38·9*	*0·83*
2nd molars	Institutions	650	74·6	13·2	10·2	2·0 (0·2)*	25·4	0·40
	Private schools	**742**	**72·4**	**9·3**	**14·2**	**4·1 (0·5)***	**27·6**	**0·50**
	L.C.C. schools	*1,382*	*48·6*	*17·7*	*23·6*	*10·1 (2·5)**	*51·4*	*0·95*
Lower:								
Centrals	Institutions	557	98·9	0·4	0·7	0·0	1·1	0·02
	Private schools	**564**	**98·9**	**0·5**	**0·5**	**0·0**	**1·1**	**0·02**
	L.C.C. schools	*1,098*	*98·3*	*0·9*	*0·8*	*0·0*	*1·7*	*0·03*
Laterals	Institutions	640	99·2	0·5	0·3	0·0	0·8	0·01
	Private schools	**723**	**99·4**	**0·1**	**0·4**	**0·0**	**0·6**	**0·01**
	L.C.C. schools	*1,354*	*97·9*	*0·6*	*1·3*	*0·2*	*2·1*	*0·04*
Canines	Institutions	650	98·9	0·3	0·6	0·2 (0·0)*	1·1	0·02
	Private schools	**742**	**97·3**	**0·3**	**2·2**	**0·2 (0·1)***	**2·7**	**0·05**
	L.C.C. schools	*1,382*	*94·1*	*0·7*	*4·3*	*0·9 (0·1)**	*5·9*	*0·12*
1st molars	Institutions	650	83·5	4·2	7·2	5·1 (1·4)*	16·5	0·34
	Private schools	**742**	**69·9**	**4·5**	**14·6**	**11·1 (4·6)***	**30·1**	**0·67**
	L.C.C. schools	*1,382*	*51·4*	*7·2*	*21·1*	*20·3 (7·6)**	*48·6*	*1·10*
2nd molars	Institutions	650	73·7	10·2	9·2	7·0 (0·8)*	26·3	0·49
	Private schools	**742**	**65·1**	**11·5**	**14·3**	**9·1 (1·6)***	**34·9**	**0·68**
	L.C.C. schools	*1,382*	*41·2*	*15·1*	*19·5*	*24·1 (8·3)**	*58·8*	*1·27*
All types	Institutions	6,344	89·5	3·9	4·6	1·9 (0·3)*	10·5	0·19
	Private schools	**7,169**	**85·8**	**3·9**	**6·9**	**3·5 (0·9)***	**14·2**	**0·28**
	L.C.C. schools	*13,381*	*73·5*	*6·2*	*12·0*	*8·3 (2·5)**	*26·5*	*0·55*

* Unbracketed figures include missing canines and molars, which are assumed to have been extracted for caries. Figures in brackets show these teeth as percentages of the total number.

† ACF (average caries figure) = $\frac{\text{Total caries figure}}{\text{Total no. of teeth (including extractions)}}$

The average caries figure (ACF), which indicates the extent of caries, was lowest for all types of teeth together in the institutional group (0.19) and highest in the L.C.C. schools group (0.55), with the figure for private schools (0.28) in an intermediate position but nearer to the institutional than the L.C.C. schools figure.

Thus it is seen that, whereas the structure of the teeth was definitely the best in the children attending private schools and worst in those living in institutions, there was less caries in the teeth of the institutional children than in the private schools group. The L.C.C. group had most caries, much more than either of the other two, in spite of the fact that the structure of their teeth was better than that of the institutional children, although not nearly as good as that of the private school group.

Relationship between Structure of Teeth and their Susceptibility to Caries

As would be expected from previous investigations (Mellanby, 1923, 1934; Mellanby and Coumoulos, 1946), in each group of children and for each type of tooth in the present survey the percentage of carious teeth increased with the severity of the M-hypoplasia, but there were some very marked differences between the groups, especially in relation to the worst grades of structure (M-Hy_2 and M-Hy_3). It is seen in Table V, for instance, that 56.8% of the molars graded as M-Hy_2 in the private schools and 66.5% in the L.C.C. schools were carious, whereas the corresponding figure for the institutions was only 29.8%. Similarly, for the molars graded as M-Hy_3 the percentages of carious teeth were 89.6 for the private schools, 92.3 for the L.C.C. schools, and only 58.2 for the institutions. The same trend is apparent when other grades of structure and other types of teeth are considered.

The similarities and discrepancies between the findings for the three groups of children are perhaps more clearly seen if they are set out as shown below. (The figures given here are for all types of teeth together and not, as in Table V, for individual types.)

No caries was found in:

Inst.	Private Schools	L.C.C. Schools	
99.7%	**98.7%**	*98.1%*	of teeth of good structure (Hy_0)
95.2%	**84.4%**	*83.2%*	of teeth slightly defective in structure (M-Hy_1)
72.2%	**48.6%**	*40.9%*	of teeth defective in structure (M-Hy_2)
45.8%	**13.8%**	*15.3%*	of teeth very defective in structure (M-Hy_3)

Severe caries was found in:

0.0%	**0.0%**	*0.1%*	of teeth of good structure
0.3%	**1.8%**	*1.2%*	of teeth slightly defective in structure
3.7%	**9.3%**	*12.0%*	of teeth defective in structure
8.4%	**40.2%**	*41.0%*	of teeth very defective in structure

From these figures the gradual decrease in percentage of teeth free from caries and increase in percentage with extensive disease as the structure deteriorates is apparent in each group; but there is a great difference between the institutional group and the other two in the proportion of non-carious and severely carious teeth associated with the more severe grades of structural defect (M-Hy_2 and M-Hy_3). The possible significance of these findings will be discussed later.

TABLE V.—*Incidence of Caries in Teeth with Varying Grades of Structure*

Grade of Structure	Place of Investigation	Incisors: Total No. Examined	Incisors: % Carious	Canines: Total No. Examined	Canines: % Carious	Molars: Total No. Examined	Molars: % Carious
Hy_0	Institutions	1,261	0·5	518	0·0	250	0·4
	Private schools	**1,970**	**0·8**	**1,071**	**0·8**	**758**	**3·0**
	L.C.C. schools	*2,837*	*1·2*	*1,514*	*1·1*	*550*	*7·0*
M-Hy_1	Institutions	891	2·7	630	2·1	956	8·6
	Private schools	**523**	**8·8**	**330**	**6·4**	**1,330**	**20·6**
	L.C.C. schools	*1,399*	*11·2*	*947*	*8·0*	*1,987*	*25·0*
M-Hy_2	Institutions	185	21·6	73	13·7	1,057	29·8
	Private schools	**149**	**30·2**	**36**	**38·9**	**669**	**50·8**
	L.C.C. schools	*536*	*39·2*	*169*	*29·6*	*2,127*	*66·5*
M-Hy_3	Institutions	13	38·5	3	0·0	91	58·2
	Private schools	**8**	**75·0**	**2**	**0·0**	**77**	**89·6**
	L.C.C. schools	*105*	*81·0*	*16*	*68·9*	*335*	*92·3*
G-Hy	Institutions	80	38·8	24	0·0	197	19·8
	Private schools	**34**	**38·2**	**12**	**0·0**	**42**	**33·1**
	L.C.C. schools	*165*	*62·4*	*24*	*20·8*	*101*	*52·5*

NOTE.—(*a*) This table does not include the few teeth shown under the heading "Hy unclassified" in Table III. (*b*) In some grades of structure the numbers of teeth are relatively small and the percentage differences between the groups may thus be exaggerated.

The proportion of carious teeth among those classified as grossly hypoplastic (G-Hy) varies considerably, but is not generally nearly as high as that for the M-Hy_3 group (see Table V).

Arrest of the Carious Process and Treatment of Teeth

In charting the incidence of arrest, only teeth in which the carious area had become definitely hard, though not necessarily smooth and polished, were recorded as showing this phenomenon. Partial arrest was ignored. Under these conditions the percentages of carious teeth showing arrest of the disease were about the same in the institutions and L.C.C. schools, but lower in the private schools, as is seen in Table VI. On the other hand, there was, as Table VII

TABLE VI.—*Teeth Showing Arrest (Spontaneous "Healing") of the Carious Process*

Place of Investigation	No. of Carious Teeth Present	% of Carious Teeth Present Showing Arrest	% Showing Arrest: If Filled Teeth are Omitted	% Showing Arrest: If Filled Teeth and those Treated with Silver Nitrate are Omitted
Institutions	645	20·6	21·7	21·9
Private schools	**955**	**15·4**	**19·2**	**19·7**
L.C.C. schools	*3,203*	*21·5*	*22·1*	*22·8*

TABLE VII.—*Carious Teeth Extracted, Treated by Silver Nitrate, or Filled*

Place of Investigation	Total No. of Carious Teeth (Including Extractions)	Treatment: % Extraction	Treatment: % Silver Nitrate*	Treatment: % Filled*	Total Percentage of Carious Teeth Treated
Institutions	664	2·9	1·1	4·7	8·6
Private schools	**1,019**	**6·3**	**1·8**	**18·5**	**26·6**
L.C.C. schools	*3,545*	*9·6*	*2·8*	*2·4*	*14·8*

* The figures in these columns would have been slightly higher if the extracted teeth had been excluded from the total numbers in the second column.

shows, far more treatment, especially that taking the form of fillings, among the children attending private schools than among the other two groups, 18.5% of carious teeth being filled, as against 4.7% in the institutions and 2.4% in the L.C.C. schools. The extraction rate was highest (9.6%) in the L.C.C. schools, next highest in the private schools (6.3%), and lowest (2.9%) in the institutions.

Staining of Surface Enamel or of Films on the Enamel

A record was made of the incidence of superficial staining of the teeth, so often seen in children, and it was found in all three groups (see Table VIII) that in those children with some or all of their teeth showing black or dark-brown stains there was less caries than in those with no stain or with green stain. Most caries occurred in children who had some green stain. The relation between these stains and the incidence of caries has been discussed by a few

TABLE VIII.—*Amount of Caries in Relation to Superficial Staining of Teeth*

Children with:	Percentage of Carious Teeth: Inst.	Percentage of Carious Teeth: Private Schools	Percentage of Carious Teeth: *L.C.C. Schools*	ACF: Inst.	ACF: Private Schools	ACF: *L.C.C. Schools*
No stain	11·5	**12·9**	*23·1*	0·21	**0·25**	*0·48*
Black and dark-brown stains	5·7	**2·9**	*15·4*	0·11	**0·05**	*0·30*
Green stain	20·2	**22·5**	*33·0*	0·39	**0·46**	*0·69*

other workers, including Pedersen (1946), who also observed that children with black stains were on the average less affected with dental caries than children without such stains on their teeth, and that those with green or yellow stains seemed to be more susceptible to the disease.

Discussion

An account has been given of the dental condition of the deciduous teeth of three groups of 5-year-old children examined in 1945, one group residing in institutions and the other two living at home and attending private schools and L.C.C. schools.

The first fact observed in this survey was that in the institutions 66.1% and in the private schools 54.7% of the children were free or almost free from caries, whereas in the L.C.C. schools the proportion in this category was of quite another order—namely, 28.1%. It was clear, therefore, either that there was some much more powerful protective factor against caries at work in the children in institutional and private schools than in those at the L.C.C. schools—and if this was so it appeared to be even more potent in the first than in the second of these groups—or that in the children attending L.C.C. schools there was some more powerful caries-producing factor in action.

Before discussing the possible reasons for these differences between the groups further details must be considered. When the teeth themselves, as opposed to the dentition as a whole, are taken into account, and when structure is pitted against caries, some interesting facts come to light. For instance, in the institutions 32.3% of the teeth were of good structure (Hy_0), in the private schools 54%, and in the L.C.C. schools 38%. The relationship between the groups was quite different when the incidence of caries was considered, since in the institutions 10.5% of the teeth were carious, in the private schools 14.2%, and in the L.C.C. schools 26.5%. Thus, whereas by far the best dental structure was found in the private schools and the worst in the institutions, the latter had the lowest incidence of caries. In the L.C.C. schools the structure of the teeth was rather better than in the institutions, but the caries incidence was very much higher than that of either of the other two groups.

Moreover, though in each group of children the better the structure the less the caries, yet for any given grade of structural defect there were fewer teeth with caries among the institutional children than among those in the other groups. For instance, in examining the molars it was found that:

In grade M-Hy_1
8.6% were carious in the institutions
20.6% „ „ „ „ **private schools**
25.0% „ „ „ „ *L.C.C. schools*

In grade M-Hy_2
29.8% were carious in the institutions
56.8% „ „ „ „ **private schools**
66.5% „ „ „ „ *L.C.C. schools*

In grade M-Hy_3
58.2% were carious in the institutions
89.6% „ „ „ „ **private schools**
92.3% „ „ „ „ *L.C.C. schools*

Similar differences between the groups could be quoted for other types of teeth.

The incidence of arrest of the carious process was rather lower in the private schools than in either of the other groups, where the results were about the same.

In view of the hypothesis, based on previous investigations by one of us and confirmed by colleagues, that the better the structure of the teeth the more likely they are to resist attack by caries, these results were clearly in the nature of a challenge, since it was found, in short, that (*a*) in each of the three groups the ordinary rule held—namely, there was a direct relation between structure and incidence of caries—but (*b*) comparing the three groups of children one with another the opposite conditions appeared to exist, for the children in the institutions, with the worst structure, had the least caries.

In comparing first the institutional and the private school children, there are two outstanding facts to be explained in the somewhat anomalous results of the survey: (1) Why was the structure of the teeth of the private school children better than that of the institutional children ? and (2) Why in the teeth of the institutional children, which were worse formed, was there less caries than in the better-formed teeth of the private school children? It is necessary in this case to work on the basis of what is known, and, as previously mentioned, the two points that have been established are: (*a*) that diets of high calcifying qualities in the pre-eruptive stage—that is, in pregnancy and lactation of the mother and in the early life of the child—produce better-formed teeth than diets poorer in this respect; and (*b*) that these same diets when given after eruption suppress, to some extent at least, the development of dental caries and tend to arrest the disease if present. Thus we have some of the same factors at work in the pre-eruptive and the post-eruptive stages, but in the pre-eruptive period the effect of the diet is to control the structure of the teeth and in the post-eruptive to influence the development and course of dental caries. The problem, however, is not as simple as it looks because, clearly, the better-formed teeth resulting from the high calcifying diet of the pre-eruptive period will in themselves be more resistant to dental caries than badly formed teeth when both are exposed to the same post-eruptive diet. The teeth under examination in this work are the deciduous set, and since their calcification begins at about the twentieth week of foetal life and eruption is more or less complete when the child is about 2 years old, it is during this period that the type of feeding must control the actual structure of the teeth. Since, however, the lower incisors begin to be erupted at the age of 6 months, the period from six months onwards must also be regarded as a post-eruptive age for an increasing number of deciduous teeth. After about two years the environmental effects would be wholly post-eruptive, while before six months the effect can be regarded as wholly pre-eruptive.

To explain the better-formed teeth of the private school children as compared with those of the institutional children, it is necessary to show that the diet of the former in pre-natal and early life was better from the point of view of calcifying properties than that of the institutional children during the same period of development. While actual proof cannot be given, we do not doubt that this is in fact the case, though the levelling up of the nation's dietaries that has taken place during recent years, and particularly during the war, has probably made this difference less than it used to be. Indeed, if this were to-day only a question of the well-to-do mother *versus* the poor mother, increased facilities for getting protective foods, either free or at a cheap rate, are now so great that big differences might not be expected. The children, however, who become the responsibility of an institution are recruited largely from unsatisfactory homes where the mothers are often less well informed and more neglectful of their children, either from force of circumstances or because the children are unwanted. It is to be expected, therefore, that so long as they continue to live under such conditions the children will be less well fed from the point of view under discussion than their contemporaries in better circumstances who will ultimately attend private schools.

As a class the well-to-do mothers are more intent on following medical advice during pregnancy and lactation than the mothers of the institutional children, and this advice nowadays usually includes an injunction to drink plenty of milk and to add cod-liver oil and other sources of vitamin D to the diet. Again, the children of the former, when weaned, are more likely to be fed in early life according to the same principles. From all points of view, therefore, it might be expected that the teeth of the private school children would be of better structure than those of the institutional children. When, however, we turn to the post-eruptive stage matters are not the same. As the children of the well-to-do mother grow older there is a tendency for them to become more pampered and for dietary preferences to be considered. If, for instance, such an item as milk or eggs is disliked it may be omitted, and the diet generally becomes of lower nutritional and calcifying quality. Sometimes, too, the daily dose of cod-liver oil or other preparation may be missed solely because parents or nurses do not like it or because they are careless in giving it to the children. In other words, the post-eruptive is often not so good as the pre-eruptive dietetic condition of children of this class. When, however, we consider the institutional children the matter is different.

On entry to an institution relatively neglected children come under conditions where feeding arrangements are regular and the diet is generally of a high quality from a nutritional standpoint—and incidentally from the point of view of calcification, as visits to institutions will confirm. This is due largely to the steadily increasing interest in the welfare of these children during recent years, but partly to wartime stringency. It is known that priority supplies, including milk, eggs, and cod-liver oil for institutional children, are regularly obtained. Moreover, it is almost certain that they are consumed, since individual likes and dislikes, which tend to disrupt the feeding arrangements of children of well-to-do mothers, cannot be considered in a large community.

Such a state of affairs as that outlined above would in our opinion account largely for the otherwise anomalous findings in the institutions and private schools.

So far as could be judged from evidence kindly supplied by teachers in the various schools and by health visitors, the children attending L.C.C. schools would, on the average, be in a position in regard to diet intermediate between those at the private schools and those in institutions during the period of tooth development, although nearer the latter than the former ; but in the post-eruptive years they would probably tend, because of the financial status of their parents and for other reasons, to be in a somewhat worse position than the private school children, though from the standpoint of this survey they would be subject to similar disabilities in regard to dietary likes and dislikes. If this were so, it would explain the fact that the structure of the deciduous teeth of these children was not nearly as good as that of the private school group, though somewhat better than that of the institutional children, and that their caries incidence was greater than that of either of the other two groups.

In this discussion only those environmental conditions —and especially the calcifying qualities of the diet—which have been established by experiment as influencing dental structure and incidence of caries have been considered. They seem to explain the facts as described. At the same time there are certainly other factors at work influencing the incidence of caries, about which we have no certain knowledge. It is said that fluorine is an important anti-caries factor, and, in England, Maldon is cited as a typical example. Here the fluorine content of the water is high and there is stated to be little dental caries compared with that in other parts of the country. In 1945 one of us (Coumoulos, 1946) found only 11.2% of deciduous teeth carious in 5-year-old children attending public elementary schools in that district—about the same proportion as was found in the present survey in the institutional children, few if any of whom were born or reared in Maldon. Again, the percentage of carious teeth in the private school group was not very much higher than that of the Maldon group. In the Maldon teeth, as in the three groups reported here, there was a direct relation between caries and M-hypoplasia, suggesting that the small amount of caries was again largely the result of the good structure rather than the influence of the fluorine in the water, although it seems that fluorine probably plays some part in the sequence of events.

Other possible factors affecting the initiation or prevention of caries, such as the effect of carbohydrates, the question of dental treatment, and the influence of tooth-brushes, have been considered in earlier publications (Mellanby and Coumoulos, 1944, 1946) dealing with the incidence of dental caries among school-children and will not be discussed here, as such discussion would at present lead only to negative conclusions. Still, the condition of the teeth of the institutional children as regards caries is, in view of their defective structure, remarkable, and if there are secrets yet to be discovered which can fully explain these results, as there almost certainly are, every effort should be made to reveal them.

Summary

A description is given and a comparison is made of the dental condition in 1945 of three groups of 5-year-old children, one residing in institutions and the others living at home and attending private schools and L.C.C. schools.

The proportion of children free or almost free from caries was greatest in the institutions, somewhat less in the private schools, and very much less in the L.C.C. schools.

Examination of the individual teeth revealed that, whereas the *dental structure* was by far the best in the children attending private schools and worst in those living in institutions, *caries incidence and extent* were lower in the latter than in the former. In the L.C.C. school group the structure of the teeth was slightly better than in the institutional group but far worse than in the private school group, and the incidence and the extent of caries were the highest of all.

Although there was a direct relation between the structure of the teeth and the incidence and extent of caries among children of each group—that is to say, the better the structure the less the caries—this did not hold between children of the different groups: thus in the institutional group teeth of a given grade of structural defect had much less caries than teeth of the same structure in either of the other two groups.

The incidence of arrest of the carious process was approximately the same in the institutions and L.C.C. schools and rather lower in the private schools.

In each group of children black or dark-brown superficial staining of the teeth appeared to be associated with a lower incidence, and green staining with a higher incidence, than the absence of stain.

Possible reasons for the striking contrasts between the groups of children in regard to their dental structure and caries incidence and extent are discussed, and it is suggested that the calcifying properties of the respective diets at different periods, both pre-eruptive and post-eruptive, are an important key to the situation.

Surveys of this kind are possible only with the good will and co-operation of many people. We should therefore like to acknowledge our great indebtedness to the following, among others: (1) the proprietors, head teachers, and assistants of the private schools, who were always very kind and helpful in every way; and (2) the superintendents, matrons, and teachers in the institutions, who were ready not only to assist us directly, but, in addition, to provide much information for which we asked. Our thanks also are due to Dr. H. E. Magee, who kindly arranged our visits to the institutions, and to Mrs. M. Kelley for her help, generously given at all times.

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Mr. Hardman, Parliamentary Secretary to the Ministry of Education, announced in the House of Commons recently that the Foundation of Education Research was being asked to undertake an inquiry into the effects on children of various forms of punishment and rewards. Mr. Hardman made this statement in reply to a question by Mr. P. Freeman (Newport, Lab.), who raised the question of corporal punishment of children in State schools. Mr. Hardman stated that his Ministry had not advocated the use of corporal punishment, but public opinion had to be convinced that without it discipline could be maintained, and he personally deplored its continuance as a means of discipline. It is to be hoped that the committee of inquiry will include among its members representatives of the school medical service and of medical psychology, and that they will examine evidence from countries where corporal punishment is prohibited in schools.

A PENICILLIN-TREATED SERIES OF CASES OF OSTEOMYELITIS IN CHILDHOOD

BY

T. TWISTINGTON HIGGINS, O.B.E., F.R.C.S.
Surgeon to the Hospital for Sick Children, Great Ormond Street

DENIS BROWNE, F.R.C.S.
Surgeon to the Hospital for Sick Children, Great Ormond Street

AND

MARTIN BODIAN, M.D.
Pathologist to the Hospital for Sick Children, Great Ormond Street

It is now well recognized that the use of penicillin in staphylococcal infections of the bones and joints of children has produced a most striking improvement in results. There is still, however, no agreement as to the dosage desirable or as to the surgical intervention which may be necessary in addition. In consequence the following account of work at the Hospital for Sick Children, Great Ormond Street, may be of interest, especially as in certain ways the treatment given has differed from that generally advised. The series described in the first two groups is a consecutive one without selection of any kind. In the third group, selection of cases is essential to the treatment advocated. An analysis of the cases is given in Tables I–III.

Group I: Acute Osteomyelitis (31 cases)

Pathology

Age distribution :—Sixteen were infants less than 1 year old ; the others ranged up to 12 years. *Site of infection* :—The lesions were in the long bones in 23 cases, other sites being the external cuneiform, the frontal bone, the sternum, and the maxilla—a curiously common site in infants. *Complications prior to penicillin treatment* :—In four cases the infection spread from the bone to a neighbouring joint, causing a purulent arthritis. Soft-tissue abscesses occurred in 12 and septicaemia in three cases. Pneumonia preceded bone disease in three cases ; otitis media and mastoiditis occurred in two cases, and femoral thrombosis in one case. *Duration of disease before admission* :—Nineteen cases were of less than one week's standing, 8 up to four weeks, and 3 up to eight weeks.

Bacteriology.—Coagulase-positive *Staphylococcus aureus* was grown from the blood stream in two cases, and from abscesses or joints in 12 cases. Haemolytic streptococcus was isolated from blood culture in one case and from abscesses or joints in three cases. Coagulase-negative *Staph. albus* was grown from an abscess in one case. All the micro-organisms isolated from these cases were highly penicillin-sensitive. In Case 5, however, a strain of haemolytic streptococcus, Lancefield group A, was ten times less sensitive than the standard Oxford strain of *Staph. aureus*. The child has made a complete recovery on the standard dosage of penicillin.

Radiology.—Changes in the *x*-ray picture are not to be expected before the tenth to fourteenth day. Their extent varies greatly, mainly according to the time at which penicillin treatment is begun. As changes may be very slight, radiographs of the sound limb are essential for comparison. The earliest detectable change is loss of definition of the trabeculi or rarefaction of the affected bone. This may be accompanied or followed by the laying down of thin streaks of new bone outside the normal line of the periosteum. The changes may proceed no further and the bone return to normal. On the other hand, very severe degrees of bony disorganization were seen, including in six cases the formation of apparent sequestra (see cases 8, 9, 12, 14, 17, 26). The severity of the radiological changes was out of all proportion to the clinical appearances and bacteriological findings. One point which has particularly impressed us is how these appearances will clear up completely without drastic surgery. It seems to us that these early radiological changes show disorganization of calcium deposition in a living bone rather than the actual death of that bone. There is need for further study of this most interesting point. In only one case (14) was a sequestrum removed. This was a particularly well defined and large one which occurred in the tibia after an infected intramedullary infusion. It was therefore not a typical case of osteomyelitis.

It should be noted, as regards both radiological and bacteriological evidence, that the abortive action of penicillin is so great that a diagnosis made on purely clinical grounds may never be confirmed in any other way.

Treatment

Penicillin Therapy.—Treatment was begun immediately after collection of bacteriological specimens without waiting for reports. The dosage was 1,000 units per lb. (454 g.) body weight per twenty-four hours, given by intramuscular injection every four hours. In two cases this amount was doubled with no difference in the result. We consider that the safest course is to continue this treatment for at least three weeks, although in many of our cases it lasted for no more than a fortnight. Occasionally sterilization of the bone lesion may take nearly three weeks.

Surgical Treatment.—An affected limb was immobilized in plaster in such a way that inspection of the affected region and aspiration could be easily performed. Immobilization was not prolonged much beyond the period of penicillin treatment, and movement was encouraged as soon as it was painless even in cases with marked radiological changes. In arthritis of the shoulder-joint the arm was merely bandaged to the side. Where our treatment differed from that generally followed was in 13 cases in which pus formed outside the infected bone. In all of these the pus was aspirated at intervals governed by the rate of re-forming pus. In most cases the aspiration was daily for the first few days, and after that at longer intervals when fluctuation could be detected. When pus was aspirated it was always replaced by injecting penicillin in a dose of 2,000 to 5,000 units. It is possible that this injection is unnecessary ; but we feel that it can do no harm, and it appears reasonable to suppose that it may sterilize the cavity more rapidly than systemic penicillin alone.

In all cases—we must admit at first to our considerable surprise—pus finally ceased to form and healing was complete without sinus formation. The advantages of this conservative treatment are very great. It avoids that disastrous change in the outlook of the case which occurs when a single infection, controllable because penicillin-sensitive, becomes complicated by non-sensitive organisms. These secondary infections may come from anywhere, but two sources are impossible to eliminate when there is an open wound. The first is the skin, in which resistant organisms tend to develop under penicillin treatment. The second is the bowel, containing coliform bacilli, faecal streptococci, and other insusceptible bacteria. Contamination from minute quantities of faecal material is unavoidable in certain situations, particularly in infants.

Results

Immediate clinical results were most striking. Many of these children were admitted in great pain, with high

TABLE I.—*Acute Osteomyelitis*

Case No.	Age	Bone Lesions	Symptoms and Signs	Complications	Time Ill	Follow-up Time	Bacteriology		Surgical Treatment	Penicillin				Functional Result	Radiology
							Blood Cult.	Local		Systemic		Local			
										Time	Total Dose (units)	Time	Total Dose (units)		
1	5 mths.	R. femur neck	Pain on movement of R. hip. T. 102° F. (38·9° C.)	Diarrhoea and vomiting	11 days	1 yr.	Neg.	None	Lorenz plaster. Hip: No pus aspirated	30 days	540,000		None	Perfect	Large cavity upper end R. femur. Now normal
2	4 wks.	R. fibula	T. 102° F. Fluctuant hot swelling R. leg for 3 days. Diarrhoea 2 weeks	Soft-tissue abscess	3 days	2 yrs.	,,	Staph. aur. coag.-pos.	Aspirations 6 times	6 days	54,000	6 days	10,500	,,	Periosteal elevation. Now normal
3	2½ yrs.	,,	T. 100·4° F. (38° C.). Tender swelling R. leg	None	3 days	1 yr.	,,	None	None	14 days	420,000		None	,,	Periosteal elevation. Now normal
4	6 yrs.	,,	T. 101° F. (38·3° C.). Malaise. Tender swelling below R. knee. R. ankle inflamed	Soft-tissue abscess	6 days	19 mths.	,,	Staph. aur. coag.-pos.	Immobi ization. Aspirations 7 times	9 days	360,000	30 days	43,500	,,	Considerable bone destruction and periostitis of shaft. Now solid new bone
5	7 wks.	Head of L. humerus	Pseudoparesis L. arm 4 weeks. T. 99° F. (37·2° C.)	Arthritis L. shoulder	4 wks.	13 mths.	,,	Haem. strep. Group A	Aspirations of joint 8 times	14 days	168,000	10 days	24 000	,,	Erosion head of humerus. Now delay of epiphys. development
6	6 yrs.	L. tibia lower end	T. 104° F. (40° C.). Very ill. Tender L. ankle. Limp	None	2 days	18 mths.	,,	None	Immobilization	10 days	400,000		None	,,	Periosteal elevation. Bone destruction. Now normal
7	10 wks.	L. tibia and fibula, lower end	T. 100° F. (37·8° C.). L. leg hot, tender, swollen	Abscess R. side of chest	1 wk.	22 mths.	,,	,,	,,	13 days	156,000		,,	,,	Periostitis and bone destruction. Now normal
8	9 yrs.	L. tibia lower end	T. 102° F. (38·9° C.). Swinging. Diarrhoea. Pain L. heel	Soft-tissue abscess	6 days	14 mths.	,,	Staph. aur. coag.-pos.	Immobilization. Aspirations 11 times	24 days	2,116,000	21 days	82,000	,,	Periosteal elevation. Much bone destrn. of shaft. Sequestration. Now sequestrum not evident. Regeneration
9	7 yrs.	L. tibia upper end	Pain L. leg. Feverish	,, ,, ,,	2 wks.	18 mths.	None	,,	Immobilization. Aspiration	14 days	420,000		None	,,	Cavity L. tibia upp. end. Sequestration. Now regeneration. Much improvement
10	2½ yrs.	L. femur neck	T. 105° F. (40·6° C.). Swinging. Rigors. Semicoma. Pain L. leg	Femoral thrombosis	4 days	2½ yrs.	,,	None	Immobilization	8 days	320,000		,,	,,	Slight periosteal elevation. Now normal
11	10 mths.	L. ankle	Cold 2 weeks. Hot, swollen, very tender L. ankle. T. 102° F.	R. otitis media, septicaemia	1 day	13 mths.	Staph. aur. coag.-pos.	,,	,,	21 days	630,000		,,	,,	No disease of bone seen
12	3 mths.	L. tibia	Cellulitis after marrow drip for D. & V. and pyelitis. General condition poor. T. 102° F.	Cellulitis, pneumonia, septicaemia	1 mth.	2½ yrs.	,,	Staph. aur. coag.-pos.	Immobilization. Abscess incised	8 days	112,000		,,	,,	Central bone cavity. Periostitis. Small sequestrum. Now normal. No difference L. and R.
13	7 mths.	Maxilla	Swollen face & L. eye, 4 days. Discharge from mouth. T. 104° F. (40° C.). Diarrhoea	Local abscess	4 days	19 mths.	Neg.	,,	Aspirations twice	15 days	264,000	2 days	4,000	,,	No definite bone change at this age
14	9 mths.	Both tibiae	Tibial marrow drips for pyelitis and D. & V. Very ill	Soft-tissue abscess. Fracture	10 days	22 mths.	,,	,,	Immobilization. Sequestrectomy	32 days	600,000		None	,,	Periostitis. Bone necrosis. Fracture. Sequestrum L. tibia. Now sclerosis
15	11 mths.	L. femur neck	T. 104° F. Swinging. Tender L. thigh. Fretful	Supp. arthritis L. hip. Septicaemia	5 days	17 mths.	Haem. strep. Group A	Haem. strep. Group A	Immobilization. Aspirations 3 times	14 days	420,000	6 days	15,000	Ankylosis L. hip	L. epiphysis not visible. Bone necrosis neck of femur. Now L. hip joint ankylosed
16	2½ yrs.	R. ext. cuneiform	Dorsum R. foot swollen, tender	None	?	15 mths.	None	None	Immobilization	11 days	260,000		None	Perfect	Bone destruction R. ext. cuneiform. Now normal
17	2½ yrs.	L. tibia lower end	Pain L. leg. Hot, tender swelling L. leg & ankle. T. 102·6° F. (39·2° C.)	Soft-tissue abscess	5 days	1 yr.	Neg.	Staph. aur. coag.-pos.	Immobilization. Aspirations 9 times Bone drilled	35 days	2,100,000	30 days	1,045,000	,,	Considerable bone destrn. with sequestration & periostitis. Now sclerosis. Sequestrum no longer seen
18	7 mths.	R. ulna	Fusiform swelling R. ulna. T. 102° F.	None	3 days	14 mths.	,,	None	Immobilization	10 days	300,000		None	,,	Widening upper end of R. ulna. Now no abnormality
19	7 mths.	R. ankle	R. ankle swollen, tender. T. 101·2° F. (38·4° C.)	,,	1 day	1 yr.	None	,,	,,	11 days	200,000		,,	,,	No definite bone disease
20	11 yrs.	L. fibula	Aching pain L. fibula. Bronchitis	,,	6 wks.	13 mths.	,,	,,	None	8 days	480,000		,,	,,	Periosteal thickening L. fibula
21	10 yrs.	L. tibia lower end	T. 104° F. Rigors. Diarrhoea. Very bad pain & tender swelling L. ankle	,,	3 days	7 mths.	Neg.	Neg.	Immobilization. Aspiration	21 days	1,280,000		10,000	,,	Periosteal elevation and loss of bone structure. Small cavity in shaft. Now slight sclerosis

TABLE I.—*Acute Osteomyelitis (continued)*

Case No.	Age	Bone Lesions	Symptoms and Signs	Complications	Time Ill	Follow-up Time	Bacteriology		Surgical Treatment	Penicillin				Functional Result	Radiology
							Blood Cult.	Local		Systemic		Local			
										Time	Total Dose (units)	Time	Total Dose (units)		
22	2½ yrs.	L. tibia upper end	Pain L. leg. Hot, tender swelling L. leg. T. 102·6° F. (39·2° C.)	Soft-tissue abscess	5 days	1 yr.	Neg.	Staph. aur. coag.-pos.	Immobilization. Aspirations 3 times	14 days	420,000		None	Perfect	Periosteal elevation. Now normal
23	3 yrs.	L. tibia upper end	T. 103° F. Swinging. Tender L. leg. Fretful	Soft-tissue abscess	3 days	1 yr.	,,	,,	Immobilization. Aspirations 3 times	14 days	420,000		None	,,	Periosteal elevation. Now normal
24	3 yrs.	L. tibia upper end	T. 103° F. Swinging. Tender L. leg. Fretful	Soft-tissue abscess	3 days	1 yr.	,,	,,	Immobilization. Aspirations 3 times	14 days	420,000		None	,,	Periosteal elevation. Now normal
25	3 yrs.	L. tibia upper end	T. 103° F. Swinging. Tender L. leg. Fretful	Soft-tissue abscess	3 days	1 yr.	,,	,,	Immobilization. Aspirations 3 times	14 days	420,000		None	,,	Periosteal elevation. Now normal
26	3 yrs.	L. tibia upper end	T. 103° F. Swinging. Tender L. leg. Fretful	Soft-tissue abscess	3 days	1 yr.	,,	,,	Immobilization. Aspirations 3 times	14 days	420,000		None	,,	Periosteal elevation. Now normal
27	3 yrs.	L. tibia upper end	T. 103° F. Swinging. Tender L. leg. Fretful	Soft-tissue abscess	3 days	1 yr.	,,	,,	Immobilization. Aspirations 3 times	14 days	420,000		None	,,	Periosteal elevation. Now normal
28	3 yrs.	L. tibia upper end	T. 103° F. Swinging. Tender L. leg. Fretful	Soft-tissue abscess	3 days	1 yr.	,,	,,	Immobilization. Aspirations 3 times	14 days	420,000		None	,,	Periosteal elevation. Now normal
29	3 yrs.	L. tibia upper end	T. 103° F. Swinging. Tender L. leg. Fretful	Soft-tissue abscess	3 days	1 yr.	,,	,,	Immobilization. Aspirations 3 times	14 days	420,000		None	,,	Periosteal elevation. Now normal
30	3 yrs.	L. tibia upper end	T. 103° F. Swinging. Tender L. leg. Fretful	Soft-tissue abscess	3 days	1 yr.	,,	,,	Immobilization. Aspirations 3 times	14 days	420,000		None	,,	Periosteal elevation. Now normal

TABLE I.—*Acute Osteomyelitis (continued)*

Case No.	Age	Bone Lesions	Symptoms and Signs	Complications	Time Ill	Follow-up Time	Bacteriology		Surgical Treatment	Penicillin				Functional Result	Radiology
							Blood Cult.	Local		Systemic Time	Systemic Total Dose (units)	Local Time	Local Total Dose (units)		
22	9 mths.	Maxilla	T. 104° F. Fluctuant swelling hard palate. Discharge L. eye	Abscess of palate	2 days	0	None	Staph. aur. coag.-pos.	Abscess incised	14 days	250,000		None	Perfect	No definite bone lesion at this age
23	6 yrs.	Frontal bone	Tender swelling of face and forehead. Headache	Otitis media	2 wks.	5 mths.	„	None	None	16 days	576,000		„	„	Bone destrn. of frontal bone. Now improved
24	5 wks.	L. tibia lower end. Sternum	Swelling L. foot at 1 week. Swelling over sternum 1 day	Abscess over sternum	4 wks.	7 mths.	„	Staph. aur. coag.-pos.	Aspirations twice	21 days	250,000	2 days	2,000	„	Bone destruction sternum and L. tibia. Now improvement
25	3 mths.	Maxilla	Discharge L. eye and nostril. Swelling L. palate. Listless	Cellulitis of face	2 days	9 mths.	„	„	Abscess incised	15 days	450,000		None	„	No definite bone lesion at this age
26	4 yrs.	L. humerus upp. end	Pain, swelling L. shoulder region. T. 102° F. Rigors. Very ill	None	1 wk.	9 mths.	Neg.	None	Immobilization	9 days	540,000		„	„	Cavity upper end L. humerus. Suspected sequestration. Now normal
27	11½ yrs.	L. tibia	Very tender swelling L. lower leg	„	2 mths.	7 mths.	None	„	„	21 days	1,500,000		„	Walks well. Plays no games	Periosteal new bone & small cavity. Now sclerosis. Small round translucency
28	2 yrs.	R. tibia	Swelling R. leg after measles. T. 100° F.	„	6 wks.	8 mths.	„	Neg.	Immobilization. Aspiration	21 days	630,000		„	Perfect	Cavities and new bone formation. Now no evidence of bone destruction or sequestration
29	4 mths.	Maxilla	Discharge from eye, nostril, and palate	Boils on hard palate	4 days	10 mths.	Neg.	Staph. aur. coag.-pos.	None	13 days	195,000		„	„	No definite bone lesion at this age
30	4½ yrs.	L. tibia epiphysis	Painful swelling L. knee. T. 100° F.	Supp. arthritis L. knee after otitis media and pneumonia	4 days	1 yr.	None	Haem. strep.	Immobilization. Aspiration	10 days	600,000	1 day	4,000	„	Osteitis of epiphysis L. tibia. Now normal
31	5 wks.	L. humerus upp. end (head). L. femur (head)	Tooth extracted at 1 week. Then septic gum. 1 week later, L. hip and shoulder swollen. Septic umbilicus. Diarrhoea. Snuffles	Supp. arthritis L. hip and L. shoulder. Subluxation(? congenital) of L. hip	3 wks.	10 mths.	Neg.	Staph. albus coag.-neg.	Abduction & extension of legs. L. arm splinted. Aspirations 5 times	21 days	250,000	6 days	12,000	Shoulder perfect. Good hip movement L. leg shortened	Defect upp. end L. humerus. Subluxation of L. hip. Now displacement of L. hip-joint as before. No evidence of ossification of head of L. humerus or L. femur. Bone healthy

TABLE II.—*Acute Suppurative Arthritis*

Case No.	Age	Bone Lesions	Symptoms and Signs	Complications	Time Ill	Follow-up Time	Bacteriology		Surgical Treatment	Penicillin				Functional Result	Radiology
							Blood Cult.	Local		Systemic Time	Systemic Total Dose (units)	Local Time	Local Total Dose (units)		
32	18 days	?	Loss of movement R. arm for 1 week. R. shoulder red, swollen. T. 99·6° F. (37.5° C.)	Supp. arthritis R. shoulder. Pneumonia. Septicaemia	1 wk.	21 mths.	Staph. aur. coag.-pos.	Staph. aur. coag.-pos.	Aspirations 15 times	10 days	84,000	18 days	28,000	Perfect	Widening of joint space. No bone disease. Now normal epiphysis
33	5 wks.	?	Swelling R. shoulder, ? after misplaced "kapilon" inj. T. 103° F. (39·4° C.)	Supp. arthritis R. shoulder	1 day	23 mths.	Neg.	„	Immobilization. Aspirations 4 times	5 days	45,000	7 days	12,000	„	No bone lesion
34	10 yrs.	?	T. 104·2° F. (40·1° C.). Abdominal pain and vomiting. Swelling R. elbow	Supp. arthritis R. elbow after mastoiditis	5 days	11 mths.	None	Haem. strep.	Immobilization. Aspirations twice	16 days	960,000	2 days	40,000	„	„ „
35	2 yrs.	?	Meningococcal meningitis. Joints swelled up during penicillin treatment	Supp. arthritis R. knee and both elbows	1 wk.	6 mths.	„	Neg.	Immobilization. Aspirations 3 times	16 days	480,000	4 days	15,000	„	„ „

TABLE III—*Chronic Osteomyelitis*

Case No.	Age	Bone Lesions	Symptoms and Signs	Complications	Time Ill	Follow-up Time	Bacteriology		Surgical Treatment	Penicillin				Functional Result	Radiology
							Blood Cult.	Local		Systemic		Local			
										Time	Total Dose (units)	Time	Total Dose (units)		
36	11 wks.	L. 7th and 8th ribs	Discharging sinus in chest for 4 weeks. No constitutional upset	Discharging sinus	4 wks.	14 mths.	Neg.	Staph. aur. coag.-pos.	Resection 8th rib. Primary suture	14 days	200,000		10,000 at op.	Perfect	Bone destruction L. 7th and 8th ribs. Now 8th rib regenerated. No evidence of bone destruction
37	4 mths.	R. 10th rib	Big abscess on back. T. 104° F. Six days' penicillin only. "No bone lesion" then. Sinus formation followed		5 wks.	20 mths.	"	"	Large sequestrum removed. Primary suture	13 days	210,000		3,000 at op.	"	Bone destruction R. 10th rib. Now some regeneration
38	10 yrs.	R. os calcis	Limp for 6 mths. Swelling R. heel and pain	None	6 mths.	14 mths.	"	"	Sequestrum removed. Primary suture & catheter tied in	10 days	640,000	10 days		"	Bone destruction R. os calcis and sequestration. Now considerable regeneration
39	1½ yrs.	L. 6th rib	At 4 mths., abscess L. breast opened. Discharged for 2 mths. Now painful fluctuant swelling below L. nipple for 2 wks.	Abscess	14 mths.	9 mths.	"	"	Excision of L. 6th rib	11 days	330,000		10,000 at op.	Perfect. Wound healed by first intention	Bone destruction L. 6th rib. Now considerable regeneration
40	5 yrs.	L. ilium and L. tibia	Acute osteomyelitis L. tibia 2 yrs. ago, treated with penicillin and active surgery. 1 month later, pneumothorax & abscess L. hip, treated surgically; no penicillin. Progressed to chronic osteomyelitis	Pneumothorax, abscesses and sinuses	2 yrs.	2½ yrs.	None	"	(1) Tibia explored in acute stage (2) Abscess L. hip incised (3) Brodie's abscess scooped (4) Sinuses explrd. Partial excision of L. ilium	10 days	1,600,000		None	Wound healed by first intention. Walking reasonably well with raised heel	Central cavity L. tibia. Bone destruction L. ilium. Hip subluxating. Now: Tibia: atrophy of disuse. No active disease. Ilium: Defect of crest healed. Left hip joint disorganized
										19 days	675,000		200,000 at op.		

temperatures, and some in a comatose state which before penicillin was a sign of grave danger to life. Within forty-eight hours, as a rule, the children were happy again, playing, sleeping, and eating well. Soft-tissue swellings, without the formation of pus, usually subsided in four or five days.

Bacteriological Results.—The blood when infected was sterilized in four to seven days. The cavities of abscesses and infected joints were sterile in less than three weeks in all cases.

Functional results were perfect in all cases but one. Full movement and power in the affected limbs were obtained in from five weeks to five months, according to the severity of the condition. There have been no recurrences and metastases of the kind so common formerly. The one unsatisfactory case points a moral, as the treatment advised was not properly applied. Case 15 received at first only a seven-day course of penicillin, and the hip, though suspected, was not aspirated. After transient improvement the blood culture became positive again and the child gravely ill. Aspiration of the joint with a full course of penicillin cured the infection, but the hip was damaged beyond recovery and is now ankylosed.

Radiological results were the re-establishment of normal bone pattern. The final absence of gross bone deformity was very striking.

Group II: Acute Suppurative Arthritis (4 cases)

Pathology.—Coagulase-positive *Staph. aureus* was isolated from the infected joints in two cases, and in one of these from the blood stream as well. No micro-organism was isolated from the joint of another case, but the arthritis developed as a complication of meningococcal meningitis under treatment. Haemolytic streptococcus was grown from the joint in one case in which arthritis developed as a complication of recurrent mastoiditis.

Treatment.—All these four cases were treated by conventional methods of aspiration and replacement by penicillin. A point of interest was the use in two cases of two needles, saline solution being injected through one to thin out unduly thick pus, which escaped by the other. There was no attempt at prolonged fixation or extension, the child being allowed to use the limb when it wanted to.

Results.—All recovered completely.

Group III: Chronic Osteomyelitis (5 cases)

Pathology.—This group of five cases consisted of three of osteomyelitis of the rib, one of the os calcis, and one of the upper part of the ilium—all of the too familiar kind in which a discharging sinus leads down to bare bone, more or less necrosed. The selection mentioned earlier consisted in picking cases in which the infected bone tissue could be removed without damage to the functions of the body. This limits the method of treatment described to such bones as the ribs, the fibulae, the sternum, the os calcis, and the crest of the ilium. In widespread infections of bones difficult of access it is unsuitable.

Treatment.—The infected bone was exposed and completely removed, taking with it a margin of healthy bone. All granulations were carefully scraped away and penicillin in solution or powder instilled. The wound was then sewn up completely, with the idea of avoiding contamination by penicillin-resistant organisms. Firm pressure was applied to it by means of an "elastoplast" dressing, and it was left untouched for a fortnight. There was no attempt to obliterate the cavity of the wound if this was difficult to do, the idea being to get healing by organization of a blood-clot sterilized by penicillin. Healing of this kind was obtained

first by Lister, who describes mixing blood and carbolic acid into a paste and using it to fill wounds.

Results.—When the dressing was removed healing in all cases was either complete or sufficiently advanced to shield the deeper parts of the wound from infection. All wounds were dry in three weeks from operation, and have remained so since for periods varying from nine months to two and a half years. It may be noted that no particular benefit has been observed to follow the local or general use of penicillin in cases in which all the infected bony and soft tissue could not be removed. Such sites of infection as the upper end of the femur or the vertebrae still remain most intractable once a communication, temporary or permanent, has been formed with the outer surface of the body.

Summary and Conclusions

Three series of cases are reported: 31 of acute osteomyelitis; 4 of acute suppurative arthritis; 5 of chronic osteomyelitis.

Of the acute cases 50% were in infants under 1 year old.

Dosages of penicillin were relatively small—1,000 units per lb. (454 g.) body weight per twenty-four hours for three weeks.

In acute osteomyelitis and arthritis, surgery was confined to aspiration of pus. Immobilization was partial and for short periods.

Radiological changes observed were far less serious clinically than might have been expected from their marked character.

In suitable cases of chronic osteomyelitis excision of infected tissue and primary suture is advised.

Mortality was *nil*. Complete restoration of function occurred in all but one of the acute cases. There was apparent complete healing in all the chronic cases.

We wish to acknowledge the kindness of physicians and surgeons at the Hospital for Sick Children, Great Ormond Street, who have permitted us to include some of their cases in this paper. We are also much indebted to Miss Eileen Rawlings for her tireless clerical assistance.

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Extensions to Joyce Green Hospital (L.C.C.), Dartford, including new wards to accommodate 120 beds, a new main operating theatre, and a nurses' home, were completed in 1939, but the formal opening by Mr. A. Reginald Stamp, chairman of the Hospitals and Medical Services Committee of the London County Council, was delayed until April of this year. This was originally one of the three river hospitals under the control of the Metropolitan Asylums Board. The main hospital buildings were opened in 1903, following smallpox epidemics in the two previous years, to take the place of the Thames ships which were formerly employed as floating hospitals. Afterwards it was used for infectious diseases generally, and during the last eight years it has admitted general medical and surgical patients. As a war emergency hospital its previous accommodation of 986 beds was almost doubled. The wards newly constructed, however, were not brought into use during the war because the large amount of glass made them unsafe, and indeed the hospital suffered extensively and repeatedly from blast. The total cost of the new extensions is £134,000. One of the new wards houses neurosurgery and physiotherapy units and the other is for children. Ear, nose, and throat, ophthalmic, and dental clinics have been established in the new premises. At the opening ceremony Mr. Stamp said that the extensions were part of a great reconstruction programme for the Council's 76 hospitals, but he added that this was the last year that Joyce Green and all the other hospitals would be under L.C.C. control. At County Hall they were anxious that the hospitals should be transferred to the National Health Service as going concerns. Sir Allen Daley paid a tribute to the medical superintendent, Dr. Maurice Mitman, the matron, Miss Vivian, and the staff at Joyce Green for the first-class medical and surgical work which had been done at the hospital throughout the war notwithstanding recurring air-raid damage and continual danger.

REFRIGERATION ANAESTHESIA

BY

E. S. R. HUGHES, M.D., M.S., F.R.C.S.

Refrigeration anaesthesia for limb amputations was introduced into the Royal Melbourne Hospital towards the end of 1944. Since then 25 lower-limb amputations have been performed with the aid of this technique, and they are here reported. With one exception all the amputations have been through the lower third of the thigh. It is not possible to reduce results fairly to statistical form owing to the diverse nature of the patients' condition. In the table the predominant constitutional factor has been indicated as either "atherosclerosis" or "diabetes mellitus." Some of the former group have had accompanying cardiac failure, renal failure, or cerebral degeneration; some of the latter group have been admitted in a coma or semicoma, and all have had atherosclerosis to a varying degree.

The local condition that required amputation has varied; most frequently it was progressive gangrene of the foot or gangrene complicated by severe pain or infection. In addition there were two cases of popliteal thrombosis accompanied by severe pain; two cases of gross infection of ulcers of the leg causing deterioration of the general condition of the patient despite conservative measures; two cases with epithelioma of the leg, one of which was severely infected and had metastatic glands in the groin, and the other equally badly infected and complicated by a pathological compound fracture of the tibia and fibula; finally, there was one case of a mangled foot in a shocked patient aged 69 years.

Technique

The simplest technique has been used throughout this series; the more elaborate and costly apparatus employed by some clinics abroad has not been available.

The Ice.—The ice has been procured from a city firm in 50-lb. (22.68-kg.) bags. It is already crushed when delivered, though sometimes the pieces have to be broken further before use. When packing a limb it was found that ice obtained on the previous day and kept at room temperature overnight was easier to handle than that obtained on the same day, because the sharp edges had become rounded off.

The Apparatus.—Two methods have been used to retain the ice in position: a wooden box, 40 by 10 by 10 in. (100 by 25 by 25 cm.) lined with galvanized-iron sheeting and drained at one corner; or two mackintoshes held in position by long stout calico bandages or by a reversed single-limb cradle. Two bags of ice are required initially, and one or two daily for maintenance in cases of prolonged refrigeration.

The Procedure

There are three main sources of infection—the patient, the ice, and the surgeon and his staff. The ice cannot be sterilized, but by adopting the usual procedures with the patient and the operating team the danger of infection is lessened. The limb and pubic region are shaved and the patient is placed on a canvas sheet. The abdomen and affected leg are given the routine pre-operative preparation and covered with sterile towels; the limb is then ready for the application of the tourniquet and placing in the ice.

The tourniquet is not an essential requirement at any stage of the procedure and may be dispensed with altogether. A tourniquet—of soft rubber pressure-tubing—has been used here for reasons given below. The tourniquet is first sterilized either by autoclaving or by boiling. The former method is preferable as a firmer grip may be obtained on the dry tourniquet. After the operator has scrubbed and the limb has been elevated, the sterile tourniquet is applied as tightly as possible just above the site of proposed amputation. It may be held with a reef knot, with sterile Kocher's clamps, or with sponge forceps. Occasionally the tourniquet has snapped some time after the application; hence it is wise to inspect it regularly.

A bed of crushed ice about 4 in. (10 cm.) deep is made, extending from above the tourniquet site to beyond the foot. To ease the pain of the tourniquet application it is advisable to keep the leg encased in ice for a period of an hour beforehand; in such circumstances the leg is lifted clear of the ice, the tourniquet is applied, and the leg is lowered again and covered with ice. The head of the bed is raised on blocks to assist drainage of the ice. The patient is made comfortable and the rest of the body is kept warm. The period of time for which the limb is refrigerated depends on the relation of the local lesion to the general condition of the patient; if the former be the cause of depression of the latter, then by cooling the lesion to the approximate level of 5° C., at which level metabolism is minimal, it becomes physiologically disconnected from the body. Therefore if the patient is suffering from severe pain or from toxaemia the affected area of the limb is refrigerated for several days without a tourniquet; several hours before the operation, as in all other cases, the refrigerated area is extended by increasing the amount of ice to just above the tourniquet level. The minimum time for which a limb may be safely refrigerated before operation varies from two to three hours.

It is not essential to give any pre-operative medication, but those who are apprehensive may have injections of morphine —1/8–1/4 gr. (8–16 mg.). In those cases of this series requiring such sedation the drug was given before the application of the tourniquet. The complete relief from a severe and persistent pain in the foot has been a most noticeable feature of refrigeration.

Transport to the theatre with the ice in position has not been difficult, as the patient and the ice-container have previously been placed above canvas. The patient is lifted on to the operating table with the ice still in position; the surgeon and his team have scrubbed and are ready. A large canvas bag accommodated on a wheeled stand is moved to the foot of the table. The leg is elevated above the ice and the latter is swept into the canvas bag. The towels around the leg are removed, the area is given a final preparation by the surgeon, and the operation proceeds as in cases with the usual forms of anaesthesia. To secure complete haemostasis the tourniquet is left in position until the surgeon orders its removal. There is no need to hurry through the operation, as good anaesthesia persists for an hour or more.

Certain special features of the post-operative period may be noted. The absence of any primary shock, despite the fact that the patient remains fully conscious of his surroundings, permits him to continue his meals without interruption. Systemic sulphonamide therapy has been used in all cases post-operatively and has been a useful measure in avoiding or lessening local and pulmonary infections. A careful watch is maintained on the chest; a cold wet bed, so often seen in the pre-operative period, predisposes to infection. After amputation the stump may be kept cool with ice bags. This has not been done in the present series for two reasons: first, the results have seemed satisfactory without such cooling; secondly, a dry bed after operation is essential. A thick layer of cotton-wool acts as a moderately satisfactory insulating dressing. Stitches have been removed from the wounds at the same time as after operation under the usual anaesthetics.

Details of 25 Limb Amputations in which Refrigeration Anaesthesia was used

Case No.	Age	Sex	General Condition	Local Condition	Remarks	Duration of Refrigeration	Result
1	60	M.	Atherosclerosis	Gangrenous foot; continued spread	Auricular fibrillation	3 hours	Discharged 4 months after operation. Gas gangrene second post-operative day
2	83	M.	,,	Gangrenous foot; severe infection	—	6 days	Discharged 5 weeks after operation. Convalescence uneventful
3	78	M.	,,	Huge infected ulcer of leg	Amputation of other leg 6 years previously	4 ,,	Death 12 days after operation. Bronchopneumonia
4	70	M.	,,	Gangrenous foot; intractable pain	Cerebral degeneration	3 ,,	Discharged 8 weeks after operation. Mild secondary shock and wound infection
5	85	M.	,,	Gangrenous foot; intractable pain	—	3 hours	Death 5 days after operation. Severe secondary shock followed by bronchopneumonia
6	67	F.	,,	Grossly infected ulcers of leg	Nephrectomy 10 years before. Poor renal function	10 days	Death 8 days after operation. Renal failure
7	65	M.	,,	Gangrenous foot; severe infection	—	7 ,,	Death 17 days after operation. Severe septic stump
8	88	M.	,,	Gangrenous foot; continued spread	Cardiac failure	7 ,,	Death 8 days after operation. Renal failure
9	78	M.	,,	Gangrenous foot; intractable pain	Paralysis agitans	6 ,,	Death 24 hours after operation. Cause undetermined
10	73	M.	,,	Popliteal thrombosis	Advanced cardiac failure	7 ,,	Death 14 days after operation. Cardiac failure; bronchopneumonia
11	78	F.	Diabetes mellitus	Gangrenous foot; severe infection and pain	—	8 ,,	Death 2 days after operation. Bronchopneumonia
12	74	F.	,, ,,	Gangrenous foot; continued spread	—	4 ,,	Discharged 4 weeks after operation. Convalescence uneventful
13	73	F.	Atherosclerosis	Epithelioma of leg; severe infection	—	3 hours	Discharged 4 weeks after operation. Convalescence uneventful
14	63	F.	,,	Gangrenous foot; severe infection	Diabetes mellitus suspected	3 ,,	Death 9 weeks after operation. Cardiac failure; stump healed
15	80	F.	Diabetes mellitus	Gangrenous foot; severe infection	—	3 days	Discharged 8 weeks after operation. Mild secondary shock and wound infection
16	78	F.	,, ,,	Gangrenous foot; continued spread	Carcinoma of common bile duct and metastasis in liver; jaundice	3 hours	Death 4 weeks after operation. Stump healed
17	56	F.	,, ,,	Gangrenous foot; severe infection	Coma	3 ,,	Death 6 days after operation. Remained moribund; bronchopneumonia
18	68	F.	,, ,,	Popliteal thrombosis	—	3 ,,	Discharged 5 weeks after operation. Convalescence uneventful
19	73	F.	Atherosclerosis	Gangrenous foot; intractable pain	Cerebral degeneration	3 ,,	Death 3 weeks after operation. Cerebral thrombosis; stump healed
20	69	F.	Diabetes mellitus	Gangrenous foot; severe infection	Semicoma	9 days	Discharged 6 weeks after operation. Convalescence uneventful
21	74	F.	Atherosclerosis	Epithelioma of leg; severe infection	Marked debility	3 hours	Discharged 8 weeks after operation. Convalescence uneventful
22	76	F.	,,	Gangrenous foot; severe infection and pain	—	2 days	Discharged 5 weeks after operation. Convalescence uneventful
23	59	F.	Diabetes mellitus	Gangrenous foot; severe infection	Semicoma	3 ,,	To be discharged. Convalescence uneventful
24	75	F.	,, ,,	Gangrenous foot; severe infection	—	24 hours	To be discharged. Convalescence uneventful
25	69	M.	Atherosclerosis	Mangled foot	Shock	3 ,,	Discharged 10 weeks after operation. Wound infection

Complications

Shock.—Primary shock did not occur, but secondary shock was not absolutely prevented, though it was minimized. It would probably have been still further decreased

if the post-operative cooling had been satisfactory in all cases. But it was found that ice without waterproof bags was difficult to handle even by the experienced individual; post-operative cooling so often meant an icy-cold wet bed, with all its attendant disadvantages, that this step was omitted.

Bronchopneumonia.—This was the cause of death of five patients. Wet sheets and blankets, caused by leakage from the ice despite elaborate precautions, were an important contributory factor. The most certain method of prevention is the use of ice-bags or electrically controlled apparatus in place of the bare ice. The ability of the patient to move about and sit upright in bed from the outset and to continue with nourishment has partially neutralized the effects of this unfortunate complicating wet bed.

Local Complications.—Surrounding the limbs with ice has not caused pain. The tourniquet occasioned temporary discomfort in some who had not been previously cooled at the site of application. In all cases the operation has been performed painlessly, and post-operative pain in the stump has not been a feature. No delay was observed in the healing of the stump except when infection supervened. There was no evidence of any sloughing of the flaps despite amputation below a tourniquet in every case (Perlow, 1944). The incidence of infection in this series actually appeared to be lessened, so conforming with published results. In the first case gas-gangrene developed; but at the same time there was a case of similar infection in hospital which was also a sequel of an amputation, but not a refrigeration amputation. Refrigeration has not increased this form of infection despite fears to the contrary (Kirz, 1944). Cultures were made from ten consecutive specimens of ice, but in no case were pathogenic bacilli isolated aerobically or anaerobically.

Miscellaneous Complications.—Two cases are noted in the Table as resulting in death from renal failure. At necropsy both cases showed advanced renal disease of long duration. No ill effects were observed from the use of the tourniquet or cold temperatures. There were no cases of thrombosis or embolism, nor were there any cold sensitive stumps as might perhaps have been anticipated. The skin of the amputated leg sometimes showed slight scaling when refrigeration had been prolonged for some days, but only the most superficial of the epidermal layers were involved.

Discussion

Since the first large-scale trial of refrigeration anaesthesia in America in 1941 (Crossman *et al.*, 1942) many independent clinical reports have been published abroad with a uniform expression of satisfaction at the reduction of mortality in poor-risk cases (Batalha, 1946; Cayford and Pretty, 1945; Hinchey, 1944; Lobachev, 1946; McElvenny, 1942; Massie, 1944; Mock and Mock, 1943; O'Neil, 1944; Richards, 1944; Yudin, 1945a, 1945b).

The very foundation of the technique is the application of cold temperatures with or without a tourniquet, and since these have been regarded with suspicion and disapproval a brief discussion is necessary.

The temperatures used in refrigeration anaesthesia are not freezing temperatures. They are never less than 0° C. The skin, by virtue of its capacity for supercooling, does not freeze unless the temperature is below −2.2° C. (Lewis and Love, 1926; Lewis, 1941). Admittedly moisture on the skin reduces the degree of supercooling, but freezing never occurs at 0° C. Cooling the skin to 0° C., or even supercooling to a considerable extent, very rarely causes injury (Lewis and Love, 1926). Temperatures resulting in frost-bite are much lower than those used in refrigeration anaesthesia (Lewis, 1941; Greene, 1941). Immersion-foot lesions have been reported in survivors adrift for several days in warm sea-water (White and Scoville, 1945). In these circumstances, however, the circulation and general resistance are depressed by starvation, exposure, and possibly other injuries. Cramped or dependent positions, tight clothing, or other local factors embarrass the circulation still further. Finally, the deleterious effects of moisture in the causation of thermal damage are implied in the term "immersion." In refrigeration anaesthesia the general condition is maintained throughout so far as is practicable; the circulation within the limb is either completely stopped or is maintained at maximum efficiency; the unfavourable effects of moisture have not been observed with cracked ice draining freely.

The tourniquet is not essential for adequate anaesthesia (Cayford and Pretty, 1945), but its employment is advised for the following reasons: (*a*) When the inflow of warm blood is stopped the tissues can be chilled thoroughly and rapidly. Radical lowering of the temperature in a limb is practically only obtainable with a tourniquet, unless there is gross pathological obstruction of the arteries. With the thorough reduction of the temperature that is possible with a tourniquet all protoplasmic activity is abolished; primary shock is non-existent in amputations on such limbs. (*b*) When the return flow of cold blood is stopped reflex vasoconstriction is prevented in various parts of the body. This might be harmful in cases of Buerger's disease and other conditions resulting in ischaemia to a part (Neller and Schmidt, 1944).

But the tourniquet is regarded with misgivings and its prolonged application with concern. The correctly applied tourniquet, however, is not as dangerous as believed (Allen, 1945c). The tourniquet that serves best is good soft rubber tubing (Allen, 1944); hard inelastic materials create trouble either through looseness or through crushing. In the leg, unlike the thin upper limb, very strong tension seems to cause no harm. The time factor has been greatly misjudged by surgeons in the past. Hinman (1945) has reviewed the factors that limit the duration of application. The most important of these are anoxia in the tissues distal to the tourniquet and shock on its removal. But the cold temperatures reduce to a minimum the oxygen requirements, and amputation of the distal tissues largely avoids the danger of shock (Allen, 1938, 1939, 1944, 1945a, 1945b; Allen *et al.*, 1942a, 1942b, 1943; Brooks and Duncan, 1940; Wilson and Roome, 1936).

The most convincing evidence, both experimental and practical, supports refrigeration as a valuable form of anaesthesia and as a sure means of excluding a constitutional depressant (Mock, 1946). However, I do not agree with those who claim that all patients to be subjected to amputation should be so anaesthetized (Crossman and Allen, 1946). Anaesthetists in England have attained a remarkably high standard, and few patients suffer from anaesthetics skilfully administered. Nevertheless it is submitted that there are certain bad-risk cases in which life can be saved by resort to this technique.

Summary

Twenty-five consecutive cases of amputation under refrigeration anaesthesia are reported. The details of individual cases are provided in the Table.

The method used in this series is described. The simplest technique has been used.

Bronchopneumonia was the most frequent complication.

Recent opinions concerning the effects of cold temperatures and tourniquet application are discussed.

It is submitted that this method be reserved for certain bad-risk cases.

I wish to express my gratitude to the Royal Melbourne Hospital Committee for permission to publish this series and to Mr. J. B. Turner and Mr. Paul Jones for allowing me to study their cases.

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PRIMARY MALARIA IN LONDON CHILDREN

REPORT OF TWO CASES

BY

C. BLAXLAND LEVICK, M.B., F.R.C.P.

Physician, St. George's Hospital and Victoria Hospital for Children

AND

M. E. MacGREGOR, M.D., M.R.C.P.

Paediatric Chief Assistant, St. George's Hospital and Victoria Hospital for Children

Two cases of primary malaria in London children have been discovered in one out-patient clinic within the space of a few months. They are reported now as a reminder of the necessity for keeping this diagnosis in mind when confronted with cases of unexplained fever in children who have never been out of this country.

Case 1

A girl aged 6 attended the Victoria Hospital for Children as an out-patient on May 9, 1946, with a history of loss of appetite and a heavy head cold for one week, nocturnal delirium for 48 hours, and vomiting, fever, and headache for 24 hours. At the time of examination a severe rigor was taking place; the oral temperature was 102° F. (38.9° C.), but there were no other abnormal physical signs. She was admitted to hospital immediately. Her temperature remained about 100° F. (37.8° C.) for the first 48 hours after admission, then fell to normal for 12 hours, and thereafter showed spikes of 100°–104° F. (37.8°–40° C.) on alternate days; each rise occurred between 1 and 8 p.m. and was preceded by a rigor lasting about half an hour. She complained of frontal headache and became confused at the height of each paroxysm. Between attacks her temperature was normal and she was alert and well. At first all investigations, including three thin blood films, proved negative. The spleen tip became palpable on May 24. Quinine sulphate, 15 gr. (1 g.) daily, was started empirically the same day and the pyrexia ceased at once. Quinine was discontinued after 10 days, but on June 6, coincident with another rigor and a pyrexia of 104° F., many benign tertian ring forms were demonstrated for the first time in a thin blood film. Quinine bihydrochloride, 12 gr. (0.8 g.) daily, with pamaquin, 15 mg. daily, was given for another ten days. Progress was uneventful apart from one sharp rise of temperature on June 12. A blood film on the 14th showed many red cells containing Schüffner's dots, but no parasites were seen then or thereafter. The spleen could not be felt after June 10. After two more courses of quinine, the patient returned home on Aug. 15 and remained symptom-free until Dec. 10, when her original symptoms were repeated. On Dec. 17 she was readmitted to hospital. A course of quinine and pamaquin was administered, and she has since continued free from symptoms.

Her past medical history revealed nothing of importance. The father, a Cypriot, came to England from Cyprus 15 years ago, and is now a waiter in London. The mother has never been out of England. Both parents and two siblings are well; no history of malaria was ascertained. There has been no contact with any relative from overseas. The patient remained in Worcestershire from infancy until September, 1945 (during the war there was a large American military camp near her dwelling-place), went to Welling, Kent, for six months, and then moved to Pimlico, where the family now live.

The medical officer of health for the City of Westminster states that in the past year, apart from relapsed cases in military personnel treated in hospital, no other case of malaria has been reported to him.

Case 2

A boy aged 2 was seen as an out-patient at the Victoria Hospital for Children on Sept. 26, 1946, with three weeks' history of a daily shivering attack between 1 and 5 p.m., not missing a single day. During these he was stated to be at first cold, blue, and shivering; then burning hot; then sweating; and, finally, half an hour later, quite well again, the whole attack lasting about three hours. There was no vomiting.

He was admitted to hospital immediately, and was afebrile. He was a well-nourished child of 28 lb. (12.7 kg.), with shadowing under the eyes and a yellowish pallor of the skin. The spleen was palpable two fingerbreadths below the costal margin. There were no other abnormal physical signs. At 3 p.m. on the day of admission and on the day following he had a rigor, the temperature rising to 103° F. (39.4° C.). A large number of benign tertian malarial ring forms were seen in a thin blood film on Sept. 27. A blood count showed: red cells, 3,000,000 per c.mm.; haemoglobin, 42%; white cells, 8,400 (polymorphs, 50%; lymphocytes, 45%; monocytes, 3%). He responded well to oral quinine and has had no recurrence since being discharged home on Oct. 23.

The patient is an only child. The parents are separated; neither has ever been abroad. The father was in the R.A.F. and was under investigation in 1941 for unexplained fever; he still has occasional fever, but has refused to allow examination of a blood film. Father and child were in close contact during the first six months of 1946. Apart from a grandfather, who had malaria in 1918 without subsequent relapse, there is no known contact with a malarial case. His only previous illness was bronchitis. He was born in Scarborough and was taken to London when 2 weeks old, to Bristol when he was 6 weeks, and back to London in October, 1945. Since then he has lived in Chelsea, apart from a visit in August, 1946, to the Isle of Sheppey, where the whole family were severely bitten by mosquitoes.

The medical officer of health for Chelsea states that no other case of primary malaria has been reported in his area during 1946, and the medical officer of health for the Isle of Sheppey gives the same report. Anopheline mosquitoes, however, are known to be present in the Isle of Sheppey.

Discussion

Unfortunately the source of infection is not absolutely clear in either case. It seems unlikely that primary malaria would remain symptomless for more than a week or two in a child in England. Therefore infection must have occurred

within a few weeks of the first symptoms, unless the attacks were relapses of an undetected primary infection months or years before. In neither history is there any suggestive record of undiagnosed fever. Case 1 had moved from Kent to London eight weeks before developing symptoms. The only known contact with potentially malarial subjects ended six months before that, when she left the neighbourhood of the American military camp; but no symptoms were noticed during or shortly after that period. It is most probable that she was bitten in Welling, Kent, by an anopheline mosquito infected by a Service case from overseas.

Case 2 must similarly have contracted the infection either in the Isle of Sheppey in August or in Chelsea thereafter. While in the Isle of Sheppey he was known to have been bitten by mosquitoes, which could have been anopheline. It is possible that his father's bouts of fever are malarial, although he was never overseas; and, while unlikely, it would also be possible during a month's holiday for infection to be transferred to the child. The mother was also bitten, but apparently was not infected. It is more probable that anophelines in the Isle of Sheppey acquired malaria parasites from a local resident infected overseas during the war. It is most unlikely that the infection in either case was contracted in London, where the density of population would lead to the recognition of more than one or two cases if infected mosquitoes existed in any area.

Although *Anopheles maculipennis* is widely distributed in Great Britain, indigenous malaria during this century has been confined almost entirely to the south-east seaboard of England and to the Thames Valley (Min. Hlth. Memo., 1943). Towards the end of the 1914–18 war numerous cases of malaria occurred among children and adults who had never left this country. In 1919, 300 cases of indigenous malaria were notified; since then the numbers have fallen fairly steadily (7 cases in 1945), the largest number occurring in north-east Kent. In addition to the two cases described above, Dr. P. G. Stock informs us that five other cases of indigenous malaria (all adults) were notified during 1946, including two from Oxford (Stevens and Blackman, 1946) and one from Kent. There is no record of primary malaria having been contracted in London for over 25 years.

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Medical Memoranda

Peptic Ulceration in Identical Twins

The literature relating to peptic ulceration in identical twins was reviewed by Riecker (1946) when he reported the occurrence of duodenal ulceration in 20-year-old identical female twins. He found no reference to any such cases before 1935, but since then Schindler (1935) has recorded the occurrence of gastric ulcer in 39-year-old identical twin brothers; and von Mentzingen (1935) and McHardy and Browne (1944) have reported cases of duodenal ulceration in 20-year-old identical female twins and 28-year-old identical male twins. The family history was not included in McHardy and Browne's report, but in the other three peptic ulceration was present in one or other parent.

A fifth case of peptic ulceration, in 30-year-old identical male twins, can now be added to the series. These twins were born on Sept. 8, 1916. The onset of symptoms in Case 1 was followed within a month by the death of the other from repeated haematemesis. When they were first examined there was no history of any gastro-intestinal disorders in either parent or in the remaining nine siblings (six females, aged 34, 33, 26, 24, 21, and 19 years; and three males, aged 28, 23, and 18 years), all of whom were alive and well. Since then the two youngest members of the family have both complained of indigestion, and at the time of writing there is radiological evidence of duodenal ulcer in the youngest male. The evidence that these twins were identical is based on the fact that they were identical in appearance and that there was only one placenta.

CASE 1

The patient, a leading aircraftman, aged 30, had been in the R.A.F. for 4½ years, and was in medical category A1. He was admitted to hospital in Antwerp under my care on Oct. 1, 1946, with a six-weeks history of abdominal pain. Following the death of his identical twin on Sept. 9, 1946, he became acutely depressed and anxious, and immediately experienced a pronounced intensification of his pre-existing symptoms. The pain was localized to the right upper quadrant of his abdomen, and did not radiate to any other site. It occurred at irregular intervals throughout each day, and not at any definite time after meals, and lasted on the average for one-half to one hour. Of late it had become worse when hungry, being then relieved by food, and had awakened him between 2 and 4 a.m. The pain bore no relation to the quality of food taken, and was not associated with either nausea or vomiting. His appetite was poor, but he was not afraid to eat. He did not think that he had lost weight. He had taken no alkalis. At the time of onset of symptoms he passed three or four fluid stools daily for three days, but he had no fever, and, so far as he knew, the stools contained neither blood nor mucus. He had had no serious illnesses in the past. His occupation entailed regular mealtimes. He smoked 10 to 15 cigarettes a day, and during the last few weeks had consumed some 6 to 7 pints (3.4 to 4 litres) of beer daily.

On examination he was co-operative and intelligent, yet he appeared tired and apathetic. The only abnormalities present were that all his premolars and molars were deficient, though no denture was worn, and examination revealed some localized rigidity and tenderness below the right costal margin, extending 1½ to 5 in. (3.8 to 12.5 cm.) from the midline. The red cell count was 4,130,000 per c.mm.; haemoglobin, 92% (Haldane); and colour index, 1.11. The benzidine test for occult blood was positive on three consecutive examinations. A test meal showed a highly acid resting juice, with a rapid rise in the total and free acidity, and the presence of starch indicated a delay in emptying. A barium meal examination (Capt. W. N. Thompson) revealed that the stomach was orthotonic, with a moderate increase in the mucosal relief. The duodenum showed retraction (Åkerlund) deformity, with a small crater on the antero-lateral wall of the cap.

CASE 2

The twin brother of Case 1 was admitted to the Royal Salop Infirmary, Shrewsbury, on Sept. 6, 1946, having recently been released from the R.A.F. after 3½ years' service in the Middle East. For the last four or five years he had suffered from indigestion and attacks of mid-abdominal pain after meals. These attacks lasted on the average for six to seven weeks, and were then followed by long periods of complete freedom. During the 24 hours preceding admission he had complained of indigestion, had vomited food only on four occasions, and had developed diarrhoea, passing jet-black stools.

On admission he felt very weak and thirsty. His mucous membranes were pale and his tongue moderately dry. The pulse rate was 112, and the blood pressure 115/70. There was an apical systolic murmur. The liver and spleen were not palpable. On Sept. 9 he vomited 57 oz. (1.6 litre) of material which had the appearance of "coffee-grounds," and he also had a large melaena. In spite of transfusions he died the same day. The cause of death was given as "haematemesis and melaena from a duodenal ulcer." Consent was not given for a necropsy.

I wish to thank Dr. A. D. Rope for allowing me to use the notes of one of his cases (Case 2), and Col. W. I. FitzGerald-Powell, late R.A.M.C., for permission to publish this report.

A. G. FREEMAN, M.R.C.S., L.R.C.P.,
Late Captain, R.A.M.C.

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The Australian Government has started a campaign against tuberculosis and appointed Dr. Harry Wenderly as Director of Tuberculosis. The Commonwealth Government has granted £250,000 for payment to sufferers from the disease and their dependants.

Reviews

FORENSIC MEDICINE

Rättsmedicin (Forensic medicine). By Einar Sjövall, J.D., M.D. (Pp. 182; paper cover, 11 Swedish crowns; bound, 14½ crowns; in Swedish.) Stockholm: Wahlström and Widstrand. 1946.

The author of this book is professor emeritus at Lund University and has over thirty years' experience of his specialty. He has written not a textbook but a general survey of the scope, problems, and methods of forensic medicine primarily for the legal profession. Though a knowledge of anatomy, physiology, and pathology is necessary for a full understanding of the specialty, he presents it in a simple manner; and medical students who like to get a bird's-eye view of a subject before reading standard textbooks will find it invaluable.

The book is distinguished by the author's high conception of forensic medicine in the service of justice, by his concentrating on the solution of problems by scientific methods, and by his freedom from the prudery and attitude of moral superiority occasionally seen in teachers of this subject. The topics discussed include professional secrecy, determination of the fact and time of death, identification, sudden death from natural causes and after treatment by quacks, the results of various forms of violence, death from physical agents, poisoning, sexual offences, abortion, and infanticide. There are no pictorial illustrations, but their absence is compensated for by numerous case-records, which are models of brevity and relevance. The author stresses the value of full collaboration between the medical expert and the police authorities, and draws attention to the importance of post-mortem examinations, since they often result in the exoneration of suspected persons.

Considerations arising from this book are that medical students might well confine themselves to learning general principles, much of the detailed knowledge now required for examinations being left for postgraduate study; that teachers of law and forensic medicine should regularly collaborate in the teaching of both medical and law students; and that one function of full-time professors of this specialty should be scholarly criticism of the law. An English translation of the book adapted to English law would be valuable.

R. WHITEHEAD.

INTRODUCTIONS TO FEVERS

The Acute Infectious Fevers. An Introduction for Students and Practitioners. By Alexander Joe, M.D., F.R.C.P.Ed., D.P.H., D.T.M.&H. (Pp. 276; 64 illustrations. 18s.) London: J. and A. Churchill. 1947.

Infectious Diseases. With Chapters on Venereal Diseases. By A. B. Christie, M.D., D.P.H. (Pp. 324. 12s. 6d.) London: Faber and Faber.

Each of these new books on infectious disease serves a useful purpose—the first as a reliable handbook for students and practitioners, the other as the complete textbook for the nurse.

Clearly Dr. Joe has followed in the footsteps of his predecessor, Claude Ker, for his book is essentially an account of the clinical material that he has himself observed. This makes it more interesting and avoids the modern tendency to give a "card-index" review of a subject, which, although valuable for reference, fails to satisfy the general reader.

The clinical descriptions are good, though perhaps because of the personal emphasis we may dispute some of the interpretations. We should have liked to see, for example, a more detailed account from the clinician's viewpoint of the streptococcal group of diseases. The author advises the early administration of antitoxin in the treatment of scarlet fever, but should he not stress that it can have little effect upon complications caused by direct extension of the infection from the throat? The use of serum in cases of septic scarlet fever seems illogical, for here we are dealing almost entirely with local streptococcal invasiveness. Again passive immunization with scarlet fever antitoxin may be of benefit in masking the effects of the erythrogenic component of the streptococcus, but tonsillitis may continue to spread among the immunized and so keep active the streptococcal transference until passive immunity has waned. We are also surprised to find bronchopneumonia listed as the main serious lung complication in whooping-cough. Segmental or lobar absorption collapse undoubtedly accounts for many of the so-called pneumonias and is the more dangerous because of its possible after-effects. Further, a remarkable number of the lung complications are tuberculous in origin, and the older clinicians' conception of this disease as a frequent sequela of whooping-cough is still regarded as true. However, these are merely differences of emphasis. The author presents an excellent survey of the common fevers which should prove popular with students. The practitioner will find that this handy volume fulfils his clinical needs and that it is useful for rapid reference.

In Dr. Christie's book we have at last a good fevers textbook specially written for nurses. Though a nurse could scarcely be expected to know all of it for her State examination, it would be an excellent reference book for the student wishing to supplement her lectures. For the health visitor's course it is the only book of its kind dealing with all the infectious diseases that she will meet, and it includes valuable chapters on public health practice and the social aspects of fevers and venereal diseases. It is highly recommended.

T. ANDERSON.

NEW THEORY OF JAUNDICE

Les Ictères. Moyens d'Exploration, Symptômes, Physio-Pathologie, Thérapeutique. By I. Pavel. Second edition. (Pp. 189; illustrated. No price given.) Bucharest: I. Pavel. 1944.

In this book, which in format and style is typical of the French school, Dr. Pavel, of Bucharest, gives his views, developed over 20 years of clinical observation, on the origin, classification, and treatment of jaundice. He discusses chiefly cases of jaundice due neither to organic obstruction nor to haemolysis and refers only briefly to the latter types. He thinks current theories of bilirubin formation and excretion do not satisfactorily explain the frequent lack of correlation between liver damage and jaundice and provide no simple interpretation of the results of the direct and indirect van den Bergh reaction. He would expect the "direct bilirubin" reaction to be diminished and not increased in liver-cell damage if this form of the pigment is indeed a product of normal liver-cell function. He suggests that bilirubin does not pass through the liver-cell but is excreted into the bile canaliculi by the Kupffer cells, which change it from the "indirect" to the "direct" form. The liver cell aids biliary flow in concentrating the bile by resorption of water and creating a relative negative pressure in the bile channels. The appearance of jaundice in cirrhosis with jaundice would depend on the relative functional integrity of the liver cells and Kupffer cells.

The author believes that the cause of jaundice not due to haemolysis or organic obstruction most commonly originates in the duodenum. Investigating these cases by intubation and radiology he concludes that they are mostly due to a functional spasm of the sphincter of Oddi or to a catarrhal inflammation involving the duodenum, biliary passages, and pancreas. The interpretation of the tests is subjective and, one might add, uncritical, so that the conclusions, which partly revive Virchow's theory, have not been widely accepted. Dr. Pavel gives interesting case histories in support of his views, illustrating in particular the supposed role of emotional and nervous factors in the production of jaundice and the beneficial results of mistaken surgical intervention. Putting his theories into practice he recommends purgation and duodenal lavage to rid the body of toxic products formed in the duodenum, especially from proteins, which, with the exception of milk, are excluded from the diet in the treatment of catarrhal jaundice. If these and other measures fail, he recommends operative intervention to re-establish biliary drainage.

The author's arguments are sometimes difficult to follow, but his evidence appears insufficient to substantiate his theories. The difficulty of interpreting an empirical test like the van den Bergh reaction hardly justifies the construction of a new theory but argues rather for not attaching too much importance to the type of van den Bergh reaction. It cannot be denied that spasm of the sphincter of Oddi and catarrh of the biliary passages are possible causes of jaundice, but we cannot ignore the evidence

that so-called catarrhal jaundice is a virus infection of the liver, and aspiration biopsy has shown that the jaundice is, in fact, related to liver-cell damage.

PAUL FOURMAN.

GOOD EARTH

Thoughts on Feeding. By Lionel J. Picton, O.B.E. (Pp. 265; illustrated. 12s. 6d.) London: Faber and Faber.

In much of this book the author stresses the value of foods grown with the aid of natural manures and compost. The loss of nutrients in the urine and faeces of our great urban populations is undoubtedly a major disturbance of the cycle of Nature. It is not easy to see how it can be prevented in the near future, yet any biologist must think that, like the impoverishment of our mineral and timber resources, it is one of the limiting factors of Western civilization and must sooner or later be ended. Some of the ideas which Dr. Picton advances and which are associated particularly with the names of Sir Albert Howard and Lady Eve Balfour are, to say the least, highly controversial. It certainly would not be true to say of the animal creation that insects and fungi do not cause disease, or that protection by means of sprays, powders, and so on is unscientific and unsound. Surely no malariologist would subscribe to such a doctrine, and malaria is one of the most serious diseases of mankind. It is therefore difficult to believe that these "basic principles" can be true of disease in plants or that the abolition of chemical fertilizers and parasiticides would promote animal and plant health. The more widely supported view is that only a judicious combination of humus and chemicals can attain this end. In any event, a civilization whose manure is wholly organic has been a stark impossibility for many years. Evidence for these statements is given in many publications, such as David Lilienthal's book, *T.V.A.*, on the Tennessee Valley scheme, or Donald Hopkins's *Chemicals, Humus and the Soil*.

Nevertheless, we entirely agree with much else that Dr. Picton says. We of the younger generation sometimes forget the immense advance in knowledge of nutrition made during the professional life of men like Dr. Picton. It needed the Boer War to reveal the deterioration in national vigour brought about by a diet of tea, white bread, and jam, and the 1914–18 war to start the first large-scale measures to redress it. The importance of the protective foods, the vitamins, and the trace elements—discussed by Dr. Picton with a wealth of historical instance and personal experience—is still too little known to the general public. Coal and agriculture are to be the two main factors in our readjustment to the post-war world, and it is therefore fitting that a group of doctors practising between the coalfields of South Lancashire and the rich grass-lands of Cheshire should have signed the medical testament on which Dr. Picton's book is to some extent a commentary. We wish them success in their proselytizing, advising them only to be sure to base their preaching on sound evidence.

L. J. WITTS.

STUDENTS' HANDBOOK

Aids to Medical Diagnosis. By G. E. Frederick Sutton, M.D. Sixth edition. (Pp. 308; 46 figures. 6s.) London: Baillière, Tindall and Cox. 1946.

There can be few volumes which contain so much information in so small a compass as does this popular little book. The teaching is factual and sound; matters of controversy and speculation are rightly excluded; all sections have been brought up to date, and a chapter on the electroencephalogram has been added. The student will find it valuable in the medical out-patient department and afterwards. Dr. Sutton is to be congratulated on writing so compactly and compendiously on elementary medical diagnosis and on avoiding the irrelevances which commonly disfigure such works.

R. BODLEY SCOTT.

Dentistry: An Agency of Health Service (Geoffrey Cumberlege, Oxford University Press, 8s. 6d.), edited by M. W. Carr, D.D.S., contains articles by various American authors on the development of dentistry as a profession, on dental education and practice, and suggestions for research. Though one cannot always agree with the opinions expressed, the book is of interest and value to those who deal with the public health and preventive aspects of dentistry.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received*]

War, Sadism, and Pacifism. By Edward Glover, M.D. (Pp. 292. 9s. 6d.) London: George Allen and Unwin. 1947.

An approach to the problems of war and pacifism by a psychoanalyst.

Diseases of the Heart and Kidney. By J. C. Banerjea, M.B., M.R.C.P., and P. K. Chatterjee, M.B., M.R.C.P. (Pp. 184. Rs.8.) Calcutta: U. N. Duhr. 1947.

A clinical account of cardiovascular and renal diseases, intended for medical students and general practitioners.

Transactions of the American Therapeutic Society. Vol. XLIII. 1943. (Pp. 98. No price.) The American Therapeutic Society. 1944.

Papers on various subjects, including heparin, the treatment of tuberculosis, and vitamin C in peripheral vascular failure.

The British Journal Photographic Almanac. (Pp. 444. 5s.) London: Henry Greenwood. 1947.

Contains instructions for many photographic processes and an article on medical photography.

The Treatment of Impotence. By Joseph Loewenstein, M.D. (Pp. 48. 5s.) London: Hamish Hamilton. 1947.

The author describes his coitus-training apparatus and includes a number of case histories in which it was used successfully.

Sick Children: Diagnosis and Treatment. By Donald Paterson, M.D., F.R.C.P. 6th ed. (Pp. 455. 16s.) London: Cassell. 1947.

This edition includes the latest views on haemorrhagic disease of the newborn and erythroblastosis foetalis, and there is new material on the sulphonamides and penicillin.

The Student's Handbook of Surgical Operations. By Sir Frederick Treves. 8th ed. revised by C. P. G. Wakeley, C.B., D.Sc., F.R.C.S., F.R.S.E. (Pp. 574. 15s.) London: Cassell. 1947.

Fifty new illustrations have been included in this edition and new portions on the chest and heart and on neurosurgery added.

An Introduction to Physical Education. By Eugene W. Nixon and Frederick W. Cozens. 3rd ed. (Pp. 251. 14s.) Philadelphia and London: W. B. Saunders. 1947.

The authors describe the history, aims, and methods of physical education as well as the qualifications required for teaching it.

Cushny's Pharmacology and Therapeutics. 13th ed. revised by Arthur Grollman, A.B., Ph.D., M.D., F.A.C.P., and Donald Slaughter, B.S., M.D. (Pp. 868. 45s.) London: J. and A. Churchill. 1947.

This edition incorporates recent advances in chemotherapy, endocrinology, and vitamin therapy.

Practical Physiological Chemistry. By Philip B. Hawk, Ph.D., Bernard L. Oser, Ph.D., and William H. Summerson, Ph.D. 12th ed. (Pp. 1,323. 50s.) London: J. and A. Churchill. 1947.

New sections have been introduced on the polarograph, isotopes, sulphonamides and antibiotics, photometric analysis, and the composition of foods.

Leitfaden für Zuckerkranke. By Dr. Georg R. Constam. (Pp. 126. 12.50 Swiss francs.) Basle: Benno Schwabe. 1947.

Instruction for the diabetic; intended for the layman.

Die Milzpunktion. By Sven Moeshlin. (Pp. 205. 30 Swiss francs.) Basle: Benno Schwabe. 1947.

A monograph on the technique of splenic puncture and the evidence to be obtained from it.

Les Parathyroides Humaines: Contribution à l'Etude des Hyperplasies et des Adénomes. By Markus Wernly and Ch. Berdjis-Chamsi. (Pp. 144. 10 Swiss francs.) Basle: Benno Schwabe. 1947.

A study of parathyroid hyperplasias and their effects.

Zur Chemotherapie der Sulfone gegen Tuberkulose. By O. Acklin, E. Rossi, and M. Schmid. (Pp. 25. 2 Swiss francs.) Basle: Benno Schwabe. 1946.

A monograph on sulphone chemotherapy in tuberculosis with an account of experiments on guinea-pigs.

Nova et Vetera

JOHN AND WILLIAM HUNTER

New Aspects of John and William Hunter. By Jane M. Oppenheimer. I. Everard Home and the Destruction of the John Hunter Manuscripts. II. William Hunter and his Contemporaries. Foreword by Fenwick Beckman, M.D. (Pp. 188. 25s.) London: William Heinemann Medical Books. 1946.

This charmingly written and delightfully produced little book is made up of two lesser books. In both Miss Oppenheimer has produced so many unobserved relationships of known facts that she must be treated as a historical discoverer in her own limited field—namely, that English social scene in which medical education in England took its modern shape.

The first booklet is on "Everard Home and the Destruction of the John Hunter Manuscripts." Home, though not a man of great mental power, was intellectually restless. He was weak, worldly, and vain, but had social powers and was a competent and highly successful surgeon. His name is attached to scores of papers in the Philosophical Transactions of the Royal Society. The merit of those that have any is that they are obviously products of the *bottega* of his brother-in-law, John Hunter, whose assistant he was. Home would have no mention in the history of science and retain only a minor reference in the history of medicine but for one act of supreme infamy which has given him a place among the immortals. None who has looked into John Hunter's career and work will doubt that the nature and achievement of his genius are peculiarly difficult to set forth and that they still await adequate interpretation. The task has been made incomparably harder by Everard, who deliberately destroyed John's records. The damage that he did to them is greater than that done by Nazi bombs, which destroyed only Hunter's museum. Home, working as a fifth column from within, did his best to filch Hunter's thoughts. He was incapable of presenting them himself, and his theft meant in effect the loss of many of them.

Miss Oppenheimer, an admirable advocate, well informed and skilful, charitable and understanding, seeks to defend the wretched Home. Her fascinating red herrings, some of a new pattern, drawn across the slimy path of Home do not prevent us smelling the rat that dwells with the skeleton in Home's cupboard. Home has been tried in the court of history and found guilty of lying, faking, meanly robbing a dead man, and basely destroying precious scientific records. Despite his advocate's eloquent and able presentation of extenuating circumstances the appeal will, we believe, fail with the candid reader. He will not, however, find that he lacks either entertainment or instruction in hearing the appeal for the defence. He may care to hear again one witness, the devoted, self-sacrificing servant of Hunter, William Clift, who had lived for six years on 7s. a week to preserve Hunter's collection and to that end had freely given out of his poverty.

"Sir Everard began by telling me," Clift told the Select Committee on Medical Education, "that an accident had very nearly occurred at his house: that it had been nearly on fire; and that the firemen insisted upon taking possession. They saw the flames coming out of the chimney. He did not wish to admit them, but they insisted. I asked him how it happened; and then he told me, that it was in burning those manuscripts of Mr. Hunter.

"I said to him, 'I hope, Sir Everard, you have not destroyed those ten volumes relating to the gallery?'

"He said, 'Yes.'

"'And Mr. Hunter's lectures?'

"'Yes.'

"And then I mentioned perhaps 20 others, that I had a very perfect recollection of. I felt that all those hopes that I had entertained were entirely frustrated and destroyed. I considered that my life had been spent in the service of that collection, and I hoped to have lived to see those papers beneficially employed. When I had made inquiry respecting the principal of them, and he told me they were all gone, I said to him, 'Well, Sir Everard, there is only one thing more to do.'

"He said, 'What is that?'

"I said, 'To burn the collection'. . . . I knew that that week Sir Everard had received back from the printer the last proof of his second volume of *Lectures on Comparative Anatomy*; and that he had used those papers very largely in the composition of that work."

So long as men contemn things that are low and meah the name of Home will be remembered.

When the final appraisal is made of John's greatness it must be largely through the six great quarto volumes of *Lectures on Comparative Anatomy* (1814–28) that Home published in his own name. We cannot allow it an extenuating circumstance that Home should insert in that work statements that he owed much to Hunter. That was so, but it was common knowledge and Home had no means of concealing it. The point is that all the treasures in that great series of observations are Hunter's, not Home's, and that Home had the effrontery to attach his name and portrait to them.

Miss Oppenheimer's other section, "William Hunter and his Contemporaries," is a very different type of work. It is a subtle, readable, and informative psychological study. How came it that one so far-seeing, public-spirited, and generous as the courtly and highly experienced William Hunter could be in social matters so small, in politics so much of a weathercock, in science so jealous? The essence of Miss Oppenheimer's answer is contained in the word "frustration." William's nobler ambitions were never allowed to fructify. He was a very successful man in the world's eyes but not in his own. Yet time has reversed the decision of his contemporaries that paid more regard to his personal qualities than to his public spirit. Medical education at long last has been forced to take the path that he had laid down for it and for which he was prepared to sacrifice his fortune.

That their English contemporaries failed to appreciate the vision and generosity of the two great-hearted Scots brethren was a loss to England which we feel to this very day. Miss Oppenheimer discusses them wisely and well.

FINE MEDICAL LIBRARY DISPERSED

The friends of Prof. F. C. Pybus, of Newcastle, have long admired the collection of ancient medical books which he has amassed by the labour of many years, and they have learnt with mixed feelings that his library was dispersed on March 19 at Messrs. Sothebys, of Bond Street—regret that it should be scattered, tempered perhaps with satisfaction that an opportunity of filling gaps in other collections should have been afforded. Prof. Pybus had many desirable rarities of the sixteenth and seventeenth centuries, but he by no means neglected the eighteenth and nineteenth. Only a few of the more outstanding items from the catalogue can be particularized here.

The sale began with two books by Aetius of Amida, published at Venice in 1534 and Basle in 1535 respectiveiy. Aretaeus's *De Corporis Humani Partium*, Venice, 1552, followed after some eighteenth century lots; later on were to be found Celsus, *Medicinae Libri VIII*, Venice, 1528; William Cowper's *Anatomy*, first edition, Oxford, 1698; Columbus Realdus, *De Re Anatomica*, Paris, 1562; two Galens, Paris, 1528, and Basle, 1538, respectively; William Harvey's *De Generatione Animalium*, first edition, London, 1651; the first English translation of the same work, London, 1653; three copies of his *Anatomical Exercitations: Concerning the Motion of the Heart and Blood*, 1660, 1673, and 1673; Hippocrates, *Opera Omnia*, 1526 and 1546; several of John and William Hunter's works; a first edition of Jenner's *Inquiry into . . . Cowpox*, 1798; Peter Lowe, *Art of Chyrurgery*, 1654; Mercurialis, 1569 and 1572; Jacobus Pacinus, *De Tenuis Humoris Febrem Faciente ante Purgationem per Artem Incrassatione* (what a title!), Venice, 1558; Paulus Aegineta, Basle, 1538; *De Puerporum Morbis*—a Sebastiano Austrio, Lyons, 1549; J. Y. Simpson's *Notes on the Inhalation of Sulphuric Ether in the Practice of Midwifery*, Edinburgh, 1847; Israel Spachius on midwifery, Strassburg, 1597; three Sydenhams of 1668, 1676, and 1685; Vegetius Renatus, *Artis Veterinariae*, Basle, 1528; Vesalius, *De Humani Corporis . . .*, Basle, 1555; and three of Thomas Willis's works, 1668, 1672, and 1682.

The United States Public Health Service is to carry out research on B.C.G. vaccine. (B.C.G. was discussed in a leading article in the *Journal*, July 27, 1946, p. 125.) Techniques of preparation and standardization will be developed; the vaccine will not yet be commercially available in the United States. New York State is to produce and test B.C.G. vaccine. Dr. Konrad Birkhaug, the Norwegian authority, has been engaged to work for the State Health Department.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY MAY 31 1947

MEASURES OF MORTALITY AND MORBIDITY

For defining the principal current problems in the fields of public health, preventive medicine, social medicine, and epidemiology—call these closely related subjects what we will—and for being in a position, as the immediate practical corollary, to take appropriate steps to cope with these problems, the first and fundamental requirement is an efficient system of recording the mortality and morbidity experience of the population. Without these vital statistics, with all their well-known imperfections and sometimes serious difficulties of interpretation, we are largely working in the dark, with no yardstick by which to measure progress (or lack of progress) and no certain indication of the weak points in the communal health upon which it would be wise to concentrate.

From the viewpoint of mortality we in Great Britain are finely served with the annual reports of the Registrars-General dating back over more than a hundred years and based upon the registrations of death. By such means, for instance, we can study, over a long or short period, the progressive saving of infant and child life, noting also, with considerably less complacency, the local and regional contrasts that still remain. Or, with an ageing population, we can consider the problems that are likely to face the new Health Service as time passes. With causes of death, fundamental though they are, we are on far more difficult ground. Fashions in nomenclature come and go; standards of diagnosis are improved; methods of certification and of tabulation change. The resultant figures are often difficult to interpret, and it would be fair to say that the vital statistics may throw up more problems than they solve. A current instance is the increasing registered mortality from cancer of the lung. Is it real, in the sense that persons to-day are more likely to die of it than were the previous generation, or is it merely an artificial rise due to improved methods of defining the primary site of the growth and thus the true cause of death? The statistics themselves will not answer the question, but they produce an important problem for thought and one worth the development of a means of inquiry. Such evidence and problems of the national mortality experience, and of its age, sex, and geographical components, the Registrar-General of England and Wales has placed before us annually in his tabulation of the mortality and fertility records (Parts I and II, Medical and Civil Tables) and in his analysis of and valuable commentary upon them (the Text volume). With the war the sequence was inevitably broken, and though some of the basic tables for the war years have been issued the Text volume has lagged behind. To catch up arrears the Registrar-General has now issued a combined volume for the years 1938 and 1939,[1] and in a further one he will cover the six years 1940 to 1945.

The present volume, although it relates to those curiously far-off years preceding the war, has much of interest in it. In particular, much space is devoted to the situation then with regard to fertility, for under the Population (Statistics) Act of 1938 the Registrar-General has been able to obtain at the birth of a child confidential information about the age of the mother, her previous fertility, and the duration of the marriage. Apart from the great importance of these details in relation to the population problem they have a bearing upon such medical questions as the association between infertility and disease and the effects of maternal age and birth order upon the stillbirth rate. This rate, for instance, was falling slowly just before the war and more rapidly during the war. Its frequency is generally at its highest among first-born children, drops to its lowest level for the second child, and then increases with the number of previous children. For children of a similar birth order it generally increases progressively with advancing age of the mother. Changes in the total crude rate, covering, as it does, mothers of all ages and births of all orders, may be due therefore not solely to environmental factors, such as better pre-natal care and better diet, but to a changing pattern in fertility—perhaps fewer births of the higher orders or fewer in older women, in whom the stillbirth risk is at its highest, or more first-order births. These new figures will allow the favourable trend of the last few years to be dissected and more clearly interpreted. Unlike Scotland, we have at present no record of the causes to which the stillbirths are attributed, a defect which it would seem worth while correcting in spite of the essential imperfections of the data.

For infants born alive some curious sex ratios in mortality are shown. In 1939, for instance, the male rate for the whole of the first year of life was 28% higher than the female rate. On the first day of life the male excess is 20%; it rises to 33% in the remainder of the first week, falls back to 20% for the second to fourth weeks, then rises steeply to 43% in the second and third months, and thereafter declines to 28, 27, and 13% in the ensuing three-month periods. Mortality of illegitimate infants was approximately twice that of legitimate infants on the first day of life and in the second and third months, but rather less in excess at other points of the year. The general trend of infant and child mortality can be illustrated by conversion of the death rates into life-table form. At the death rates of 1871–80 of every 100 boys and girls born alive 73 and 76 would have survived to their fifth birthday; before the first world war, 1910–12, the figures had risen to 83 and 85, and before the second, 1938–9, to 93 and 94. Comparable figures for survival from birth to age 15 are, approximately, 70 boys and 72 girls in 1871–80; 80 and 83 in 1910–12; 92 and 93 in 1939. In 1939 a striking new feature of early child mortality was the phenomenally low mortality from measles, scarlet fever, and bronchitis and pneumonia. In contrast to these gains, and indeed to those at most other ages, the death rates of males at ages 50–65 have shown

[1] *The Registrar-General's Statistical Review of England and Wales for 1938-39* (New Annual Series Nos. 18 and 19). Text. H.M.S.O. 4s. 6d. net, post free 4s. 9d.

little change since 1923, a feature which is due to a large and continuing rise in the deaths assigned to degenerative heart disease. In seeking an explanation of this rise the Registrar-General suggests that it may be significant that men of this age group in 1939 were aged 25–44 in 1914–18, when many of them were subjected to abnormal stresses.

While we have, therefore, no dearth of material to study and analyse in the field of mortality, it is equally clear that stone-dead, though it may have no fellow, is unlikely to be an all-sufficient guide. During the war (and since) we were constantly told that the health of the nation was never better. But in this respect mortality indices are not wholly convincing; we need information on, at least, the incidence of major and, if possible, minor illnesses, and cannot concentrate only on those that have a fatal result. Beyond, however, the notifiable diseases and some information from national health insurance records we had but few data. It was to meet this need that the Government's Social Survey organization, on behalf of the Ministry of Health, started a continuous survey of the prevalence of sickness. Using a small but randomly chosen sample of some 2,000 to 3,000 persons per month—each time in a varying set of districts—and by the home-visiting of each by trained investigators, it has endeavoured not only to construct a general picture of the incidence of illness but to accumulate sufficient data to demonstrate the nature and frequency of ailments and injuries at different ages, between the sexes, and in relation to geographical and social variables. The survey is, of course, entirely on a voluntary basis; there is neither "snooping" nor compulsion, but it is reported that out of some 81,000 people interviewed up to December last year only about 0.5% refused to take part. Some results of this work have been published from time to time in the *Monthly Bulletin of the Ministry of Health and Public Health Laboratory Service* and in the recent report of the C.M.O. on the health of the nation in the war years, but there has so far been lacking a sufficiently detailed account of the Survey's scope and methods to allow interested workers to judge fully of its value and limitations. That lack has now been partially corrected by the preparation, by Patrick Slater, of a report on the Survey of Sickness, October, 1943, to December, 1945. It is only partially corrected, for unfortunately this report is not on sale, and a copy can be seen only by arrangement with the Director of the Social Survey.[2] When paper supplies are less restricted it is to be hoped that this and other reports of the Social Survey will be made available both to the public and to workers in allied fields—in other words, not only for the information of the former but also for the use and criticisms of the latter.

Apart from a description and discussion of the details of methodology the present report gives results which have not previously been published. The illness and injury rates are analysed by age groups. The former, as one would expect, tends to rise fairly steadily as age increases, but the latter shows a relatively high rate at ages 16–24, a fall to a minimum at 35–39, and then a fairly steady increase up to 55–59, with, perhaps, a fall in the final age group 60–64. In urban areas the injury and illness rates are both higher than those in the rural areas; with rising income sickness falls, but liability to injury shows no clear change; there is apparently no association between the incidence of illness and injury and the number of persons per room. The obvious objection to these simple comparisons is that only one feature is being examined at a time. For instance, the comparison of the rates of sickness at different levels of overcrowding or for different income levels may be affected by different age constitutions in the populations at risk. Standardized rates are required, and though the author in defence says that "the intention here is merely to provide an impartial exhibition of the diversity in the data—to suggest problems rather than solutions"—it is not obvious that such crude rates can fulfil even the former aim. Other data collected in these inquiries allow an estimate to be made of the extent to which medical opinion is consulted in sickness or in injury.

The main value of this still experimental work clearly lies in its capacity to reveal periodic changes in the public health, thus linking up with and adding to the death records. But to fulfil this purpose adequately it must be published, and in future, the Report states, such figures will be included in the Quarterly Return of the Registrar-General. A specimen return is included in the present report, and potential users are invited to comment and stress their needs. In addition, it may be noted, special inquiries—e.g., into the incidence of deafness—can sometimes be usefully tacked on to the routine health survey. The organization is there, and we have made a useful start towards getting one measure of the sickness rates prevailing from time to time.

THE VOLE BACILLUS

The revival of projects for active immunization against tuberculosis by means of B.C.G. vaccine requires that the comparative merits of a vaccine containing the vole acid-fast bacillus should also be considered. It is therefore useful to have an account of everything which is known about the properties of this organism, including previously unpublished information about the immediate effects of inoculating human beings with living vaccine made from it. This account is given by A. Q. Wells, the discoverer of the vole bacillus, in a recently published monograph entitled "The Murine Type of Tubercle Bacillus."[1] The decision to regard the organism as a third distinct mammalian type of *Myco. tuberculosis* is clearly correct, although for the time being it is likely to retain its original, brief, and more familiar name.

Wells identified this bacillus as the cause of a widespread disease in wild voles in 1937. The most striking feature was the formation of chalky subcutaneous masses, over which the skin was liable to ulcerate, containing enormous numbers of acid-fast bacilli; lymph nodes were extensively involved, undergoing caseation, and lesions sometimes occurred in the lungs, liver, and spleen. Animals so affected were trapped in widely separated

2 "Survey of Sickness," to be seen by arrangement with Mr. L. Moss, Director, Social Survey, 39-41, Nottingham Place, W.1. (Welbeck 8536.)

1 Med. Res. Cncl. Sp. Rep. Ser., No. 259, 1946: published March, 1947.

areas, including Oxfordshire, Wales, and Scotland. The further information about this disease now published includes several points of interest. It has been identified in three other species—the bank vole, the wood mouse, and the shrew. It has been shown to be an exceedingly chronic condition, an advanced stage of which has little apparent effect on the animal's activity. It is indeed so chronic that there is "no evidence that the expectation of life for a tuberculous vole is any less than for an uninfected vole." Study of the possible routes of infection has shown that cannibalism is likely to be a major factor. The contamination of water, and to a less extent mere cage contact, where food may be contaminated by an infected animal, will also produce the disease.

The vole bacillus is distinct morphologically and culturally from other types of *Myco. tuberculosis*. It is indistinguishable serologically from the human and bovine types, as is here clearly shown by agglutinin absorption tests also embracing the avian type, *Myco. phlei*, and *Myco. smegmatis*. A tuberculin prepared from it gave reactions almost equal to those produced by standard tuberculin in guinea-pigs infected with "mammalian" tubercle bacilli (presumably human or bovine). Its pathogenicity, however, is strikingly distinct. Although a large dose intraperitoneally may cause progressive and fatal disease in the guinea-pig, subcutaneous injection of anything less than the very large dose of 5 mg. produces only a local lesion. That such infection, in either guinea-pigs or calves, produces a high degree of resistance to subsequent inoculation with virulent tubercle bacilli is of course the main fact to which the discovery of this organism owes its practical interest. The early observations by Wells himself, by the late Stanley Griffith, and their colleagues, strongly suggested that the degree of this resistance is greater than that produced by B.C.G. This work had to be abandoned early in the war, and the guinea-pigs in Wells's and Brooke's main experiment were killed only about three months after their inoculation with virulent bacilli: at this stage there seems to be no doubt that the extent of disease was much less in the vole bacillus than in the B.C.G. group. Experimental study was not entirely abandoned during the war. K. Birkhaug[2] now recounts the smuggling of cultures from Oxford into Norway which enabled him to repeat the Oxford experiment, with the difference that the animals were allowed to survive indefinitely. Whereas all controls died in little over 200 days, nearly all the immunized lived for 300 to 600 days, but the difference in survival time between the vole bacillus and the B.C.G. group was not significant. The last word has evidently yet to be said on this subject, but in any assessment of the relative merits of the two vaccines another property must be given due weight. B.C.G. is a bovine bacillus of artificially lowered virulence, and its stability from this standpoint is uncertain. Some fear the possibility of spontaneous enhancement; more likely perhaps is a greater degree of degradation with loss of immunizing efficiency. The vole bacillus, on the other hand, is naturally avirulent for other animals, and requires only to be maintained in its normal host to preserve its present characters.

[2] *Amer. Rev. Tuberc.*, 1946, **53**, 411.

The most advanced stage of Wells's work, here described for the first time, is the inoculation of human subjects with living cultures of the vole bacillus. Subcutaneous injection of a dose varying from 0.025 to 1 mg. was practised in 51 subjects, most of whom developed slowly healing ulcers at the site of injection; there was no involvement of lymph nodes or sign of any other ill effects. The multiple puncture method, now considered the best method of inoculation with B.C.G., was employed in 69 subjects, and produced a varying number of papules which remained visible for one to three months. All these subjects, originally tuberculin-negative, acquired tuberculin sensitivity except two given the smallest dose by the latter method. This procedure is therefore safe, effective as judged by the acquisition of tuberculin sensitivity, and free from the drawback of producing an open lesion and a subsequent unsightly scar if the multiple puncture method is used. How vital a stage has thus been passed in the development of what may be a valuable method of immunization needs no emphasis.

RUTIN IN CAPILLARY FRAGILITY

It will be remembered that in 1936 Szent-Györgyi prepared a substance from lemons and from paprika called citrin. This was able to restore normal capillary fragility in guinea-pigs when an increased fragility had been produced experimentally. Now citrin is an impure mixture of two flavone glycosides—hesperidin and eriodictyol. When these glycosides were obtained in crystalline form they were found to be physiologically inert, and the active compound of the crude citrin, called by some Vitamin P, has never been discovered. Probably the active substance is rutin, which has a close chemical relationship to hesperidin, being a crystalline glycoside of quercetin and a derivative of flavone. Rutin is obtained from the leaves and flowers of buckwheat, tomato stems, yellow pansies, and many other flowers and leaves.

Rutin appears to be of value for different purposes, the most important of which is to prevent haemorrhage in patients with hypertension. It is also beneficial in hereditary haemorrhagic telangiectasis, or Rendu-Osler-Weber disease, of which Kushlan[1] has recently reviewed 1,000 cases in 175 families. The danger of increased capillary fragility in hypertension is suggested by the observations of Griffith and Lindauer,[2] who examined 265 patients. They determined the capillary fragility by Gothlin's method, which is to mark an area 6 cm. diameter in each antecubital space and to note all blemishes which might be confused with petechiae; to apply a blood pressure cuff to each arm and maintain a pressure of 35 mm. Hg for 15 minutes; to lower the pressure and count all petechiae, using a lens of 5 D; one hour later, to repeat, using a pressure of 50 mm. The number of petechiae appearing after 35 mm. pressure is doubled, and to it is added the number appearing after the higher pressure. A normal figure is 8 or less, while 13 or more indicates increased fragility. Of the 265 hypertensive patients 218 had normal capillary fragility, while in 44 it was raised. The incidence of apoplexy in those with normal fragility was only 4%, whereas it was 25% in those with increased fragility. Similarly, retinal haemorrhages were present in 2% only of the normal group, but in 21% of those with increased fragility. These figures make it

[1] *Gastroenterology*, 1946, **7**, 199.
[2] *Amer. Heart J.*, 1944, **28**, 758.

clear that capillary fragility is important. By the use of rutin capillary fragility is restored to normal in a high proportion of patients. It is given in doses of 20 mg. to 40 mg. by mouth three times a day. Griffith, Couch, and Lindauer[3] describe a return to normal in 8 patients out of 11 in two months.

In Kushlan's cases of haemorrhagic telangiectasis already mentioned the action of rutin is much more rapid. In a typical case with a family history of the condition, nose bleeding and skin lesions began in childhood. Gastro-intestinal haemorrhages began in the fourth decade. The most recent haemorrhage created a grave situation in spite of five blood transfusions. At this point Kushlan gave rutin, 40 mg. three times daily. There was a remarkable change in twenty-four hours. Daily epistaxis and bleeding from the gums ceased for the first time since childhood, and did not recur.

Shanno[4] has also described 35 cases of which 24 had hypertension; 13 of these had increased fragility which was restored to normal within twelve weeks. He also describes two patients with pulmonary haemorrhage of undetermined origin; their capillary fragility was abnormally great; when they were given rutin the bleeding stopped and the fragility became normal. It is worth noting that the rutin used by Shanno was prepared by the East Regional Research Laboratory of the U.S. Department of Agriculture by alcoholic percolation of buckwheat; it was not prepared by a commercial firm. Rutin has been given daily for as long as sixteen months without producing harmful effects.

PENICILLIN IN OSTEOMYELITIS

Staphylococcal infection in its more severe forms was given first claim on the exiguous supplies of penicillin available in the earliest therapeutic trials ever made. Acute osteomyelitis in children consequently figured largely in the original series of patients treated at Oxford, and their successful outcome was a large part of the foundation for the brilliant hopes which have since been fulfilled. Another early series was described in this *Journal* by I. M. Robertson[5]; it consisted of 7 patients, all of whom recovered completely except one whose treatment was not begun until thirty-one days after the onset. Except in one other case orthodox surgical measures were employed in addition to penicillin treatment. In experience which has accumulated since these early days bone lesions have been classed somewhat apart from all others in their response to chemotherapy: it has become abundantly clear that a focus of infection in dead bone cannot be dealt with by any methods short of radical surgery. At what stage of acute haematogenous osteomyelitis does the extent of bony necrosis become such that removal of the affected area will alone serve to eradicate the infection?

An encouraging answer to this question may be deduced from the experience of T. Twistington Higgins and his colleagues at the Hospital for Sick Children, Great Ormond Street, described in their paper on page 757. In this series of 31 cases of acute osteomyelitis 19 were of less than seven days' duration, the remainder two, three, and four weeks' or even more; all nevertheless responded to treatment on very conservative lines. Open operation was entirely avoided. Collections of pus were simply aspirated and replaced with penicillin solution. The great advantage of this procedure, as the authors point out, is that it eliminates the danger of secondary infection. When this occurs it is often due to penicillin-resistant bacteria, with the consequence that chemotherapy cannot thenceforward exert its full effect. It also enables locally injected penicillin solution to be retained and thus to exert a prolonged and powerful effect in the neighbourhood of the lesion itself. The same treatment is indicated for suppurative arthritis and was employed successfully in 4 other cases described in this paper. The dosage of penicillin given intramuscularly was very modest by present-day standards, being strictly related to body weight, and based on an adult dosage of about 150,000 units per day. The only failure in this series appears to have been due to stopping intramuscular penicillin too soon: it should be continued for at least two and preferably three weeks. From the fact that in only 2 out of 19 of these cases so tested was the blood culture positive, these may be judged to have been on the whole examples of a less severe type of osteomyelitis. It is nevertheless gratifying that such excellent results were obtained by simple and conservative methods. No doubt the earlier treatment is begun the more confidently can such a result be expected, and it must be recognized as a grave mistake to wait for unequivocal radiographic evidence of a bone lesion before beginning treatment.

[3] *Proc. Soc. exp. Biol.*, N.Y., 1944, **55**, 228.
[4] *Amer. J. med. Sci.*, 1946, **211**, 539.
[5] *British Medical Journal*, 1944, **1**, 519.

COMPARATIVE MORTALITY INDEX

A comparison of crude mortality rates between one period and another or between different areas at the same period is always likely to be misleading, because of differences in the sex and age constitution of the population. This difficulty can be overcome by the method of standardization. In our official statistics the census population of 1901 has been taken as the standard, but during the past forty years the proportion of the population aged 65 and over has increased to twice the corresponding figure for 1901. The fall in the birth rate and the decreased mortality in childhood are the two factors primarily responsible for a steady change in age distribution which has caused the standardized death rate to diverge more and more from the crude rate. In 1901 the crude and the standardized death rates were both 16.9 per 1,000, and they declined steadily until by 1938 the former was 11.6 and the latter 8.5. Although the standardized rate is a fictitious rate and is only useful for comparative purposes—for which reason it was designed—it does convey an impression that the death rate has fallen to a very low level, an impression which is unreal. The standardized death rate has been below 10 per 1,000 since 1932. To obtain an actual rate as low as this it would be necessary for the average length of life to be over 100 years, which is not yet the case.

The unreality of the standardized death rate has led to much discussion, and various alternatives have been suggested. Yule's "equivalent average death rate" has been used in the text of the Registrar General's *Statistical Review*. It employs the arithmetic mean of the death rates in thirteen quinquennial age groups between 0 and 65. The result is that which would be given by a standard population with the same numbers in each age group, but since it ignores ages over 65 it does not solve the present difficulty and is not a suitable substitute for the standardized death rate. A more recent census population figure might be used as the standard, as has been done in Scotland, where the 1931 census population is used, but besides breaking the continuity of the series of rates this could be only a temporary expedient. The population is still rapidly changing in age structure, and a further revision would be necessary in a decade or so.

A new method of comparing mortality, the Comparative Mortality Index, devised by the General Register Office

and introduced into the *Statistical Review* for 1941 (Part 1, Appendix) has been reviewed by Stocks.[1] This index is a ratio and avoids a rate per 1,000. It differs from the usual method of standardizing in using a mean population for any two years for which a comparison is to be made and has, therefore, an age and sex structure intermediate between the two years. To avoid the labour involved in comparing every pair of years separately, 1938 has been taken as the "base year," and the ratio of mortality for every other year to the mortality of 1938 has been calculated. By this means a comparison of the many hundreds of possible pairs of years can be simplified by an indirect approach. Instead of applying the death rates to a population midway between the two years the Comparative Mortality Index can be obtained by dividing one ratio related to 1938 by the other ratio, also related to 1938. The resulting ratio is not identical with that found by the direct method, but the difference is immaterial. Comparing 1941 with 1931, the direct approach gives a value of 0.884 for females; the ratio between the C.M.I.s with 1938 as a base is 1.043/1.183, which is 0.882. The C.M.I.s decline steadily but not so steeply as standardized death rates. Thus the ratio of the standardized death rate of 1891 to 1938 is 2.352, while the ratio for the C.M.I.s is 2.175.

In 1901 population was chosen as a standard because it included relatively few infants and old people; it formed a standard exceptionally favourable to low mortality, and its use yielded comparatively low standardized rates. The choice of 1938 as the base year for C.M.I.s was made because it was the last year undisturbed by war; for many causes it has the lowest rate of mortality up to that date; and it represents the best standard reached in pre-war conditions. After a new census it may be convenient to change to the census year as base.

RADIO-ACTIVITY IN CANCER DIAGNOSIS

The possibility of using radio-active forms of chemical elements to indicate abnormalities in the local circulation or in the absorption of the element concerned has been recognized for a number of years. Marinelli and Goldschmidt, for example, drew attention[2] to one case of melanoma and two cases of mycosis fungoides in which the selective absorption of radio-phosphorus was demonstrated. Cancer cells absorb a relatively large amount of newly ingested or injected phosphorus, and this fact has been related to growth requirements. Low-Beer, Glenn Bell, McCorkle, and Stone now report[3] from the University of California Hospital 25 cases of actual or suspected carcinoma of the breast in which the intravenous administration of a small dose of radio-active phosphate, followed by external measurement of radio-activity with a bell-jar type of Geiger-Müller counter at intervals of two, four, six, and twenty-four hours after injection, was used to give a diagnostic indication of the nature of the tumour. Of these 25 cases, 5 are described as "obviously" malignant on clinical examination, and a further 11 were proved by post-operative microscopical examination to be malignant. In all these cases the external "count" obtained was not less than 25% greater than that obtained with the counter above either the other breast or other normal tissues. In the remaining 9 cases, in which the excess (if any) was less than 25%, 8 tumours proved to be benign, and the last was a mucoid carcinoma with relatively few cells. It would appear, therefore, that in the particular series of cases described an effective diagnostic indication was obtained. One very serious limitation must, however, be noted. Because the "radiation" from radio-phosphorus is entirely of the "beta" type—that is, consists of electrons—tissue absorption is relatively rapid. The method, accordingly, must be limited to tumours which are reasonably near the surface of the body. Moreover, the question naturally arises whether the admittedly arbitrary 25% criterion will prove satisfactory, in view of the obvious connexion between the depth of the tumour and the strength of the surface radio-activity. The authors themselves suggest that their test should not alone be accepted as an adequate indication for or against operation until a larger series of cases has been investigated. The main immediate interest of their findings is as an illustration of the type of progress which may be expected as radio-active isotopes become more widely available.

[1] *Monthly Bulletin of the Ministry of Health and the Emergency Public Health Service*, July, 1946.
[2] *Radiology*, 1942, **39**, 454.
[3] Ibid., 1946, **47**, 492.

CELLOPHANE WRAPPING FOR ANEURYSMS

The surgical treatment of aortic aneurysms is still an open field, and no really satisfactory method of relief has been evolved in spite of many ingenious efforts. Wiring had a phase of popularity and is still occasionally used. Colt's umbrella was a great improvement on coiled wire and still remains perhaps the best method, but shares the disadvantage of the other wiring methods that it is limited in its use to the saccular type of aneurysm, which is much less common than the fusiform type. Babcock[1] advised anastomosis of the common carotid artery and the internal jugular vein in an attempt to lower the pressure in the aorta, but his method has never found favour. Various methods have also been suggested and used to produce external compression of the vessel wall or to promote fibrosis and contraction of the lumen. Many of these are too traumatic and dangerous, but the use of a cellophane wrapping for this purpose seems kinder and promises better results.

Poppe and De Oliveira[2] point out that cellophane has been used both to produce fibrous tissue reaction and also to prevent a fibroblastic response. In this last connexion, for instance, it has been successfully used in neurosurgery. This apparent paradox is explained by their investigations into the response to different varieties of cellophane which they placed around the abdominal aorta of dogs. Some varieties were almost inert, but polythene cellophane was found to produce a marked fibrous reaction so that the wall of the aorta after two and a half months was thickened to six times its normal size and its lumen was reduced to about one-third of the normal diameter.

They report the use of polythene cellophane wrapping in four cases of aneurysm of the thoracic aorta. In three of the cases insufficient time had elapsed to provide any conclusions, but in the fourth case the patient, up to the time of reporting, three months after the operation, had been completely relieved of the severe pain of which he had been complaining. They have also used a polythene film successfully for the ligation of a recannulated ductus arteriosus in a case of subacute bacterial endocarditis in which ordinary dissection and ligation would have been impossibly dangerous.

Their account of cellophane wrapping is in the nature of a preliminary report, but it seems to offer a successful method of gradual fibrosis and obliteration of aneurysms and large vessels. Accounts of further experiences will be awaited with interest.

[1] *Amer. J. Surg.*, 1932, **16**, 401.
[2] *J. thorac. Surg.*, 1946, **15**, 186.

HUMAN WATER REQUIREMENTS

An interesting paper by Dr. Kenneth Mellanby entitled "Human Water Requirements" was read at a recent meeting of the Nutrition Panel of the Society of Chemical Industry. Dr. Mellanby began by pointing out that the earliest forms of life existed in the sea, being bathed in a salt solution. There was some evidence that the composition of sea water was different then from what it was to-day, and salt concentration in protoplasm seemed to indicate this. Thus primitive organisms were able to get rid of their waste nitrogen in the form of ammonia, which rapidly diffused in the surrounding water. When organisms evolved to a terrestrial existence they were at once in a position in which desiccation took place, and they developed a more or less watertight covering and got rid of their waste nitrogen in a form less toxic than ammonia. The insect had its watertight cuticle and the bird its feathers, which cut down moisture loss from the skin surface, and both had a nitrogen end-product in the form of relatively insoluble purines which required little water. Man had not evolved a watertight body surface, and he excreted his nitrogen in the relatively non-toxic form of urea, which required a certain amount of water.

Water Content of Man

Dr. Mellanby gave the following figures for the water content of an average (70-kg.) man:

	Percentage of Body Weight	Litres
Intracellular (actual protoplasm of cells) ..	40–50	35
Extracellular { Tissue fluid	12–15	11
Extracellular { Plasma	4– 5	3
		49

It was usually found that the production of "metabolic" water and the loss of water by evaporation in the lungs ran parallel. The individual at rest lost little from the lungs and produced little "metabolic" water. The amount of water required to prevent loss of body weight under experimental conditions was known, but whether this was sufficient for optimum health was another question. Loss of water from lungs and skin and by faeces could not be greatly modified. Experiments indicated that unless a person had a total water intake from drink and food of over 1 litre a day desiccation would take place, becoming progressively worse and eventually ending in death. In some M.R.C. experiments during the war volunteers went from Tuesday evening to Saturday morning with no water and with a dry diet. With no fluid intake the urine output was 0.5 litre a day. As the experiment proceeded the salt content in the urine fell to 1 g. per day. Abnormalities began to show themselves on the third day of the experiment. As for sensation, thirst was not so evident as might have been expected; irritability and a disinclination for food were shown. The giving of 4 oz. (114 ml.) of water a day had no noticeable effect on urine output; it was more tantalizing than anything else. A little more effect was apparent with 8 oz. (227 ml.), which gave a rinse-out, but not until 1 litre was given was any real effect obtained. With no water intake desiccation depended on loss of weight. The results of German experiments in concentration camps showed that death took place usually after a fortnight, but these had to be taken with reserve, for the subjects were not co-operative. For example, they were found licking the swabs after the floor had been cleaned. In temperate climates death would probably take place in ten days if no water were drunk.

Camel and Desert Mouse

The amount of water lost from the lungs varied with the temperature and humidity of the air. Sweat production in a body at rest under temperate conditions was 20 ml. an hour; with exercise in hot, dry air it might amount theoretically to 21,100 ml. a day. At temperatures of over 97° F. (36.1° C.) death was more likely to result from heat stroke than from desiccation. It had been suggested that under conditions of desiccation it was better to eat fat because of the amount of metabolic water which this produced. The camel stored fat in its hump and the desert mouse in its tail. But it was necessary to consider also the amount of oxygen required to oxidize fats and carbohydrates respectively. To breathe the additional oxygen required for oxidation of fats involved more water loss from the lungs, and this loss would outweigh the extra "metabolic" water produced by oxidizing fats. The reason why desert animals stored fat was because it was the only food they could store conveniently. Dr. Mellanby concluded that man must have a water intake of 500 ml. over his water output in order to excrete and therefore to get rid of his harmful waste metabolites.

THE PUBLIC HEALTH

ANNUAL REPORT FOR 1945

Sir Wilson Jameson's report on the work of the medical department of the Ministry of Health during 1945 was published last week.[1] For the first time the Chief Medical Officer's report is combined with a report dealing with the more administrative and less strictly medical work of the Ministry of Health. There is much to be said for this combining of two reports which have previously appeared separately, but there is the difficulty that all vital and health statistics cover the calendar year whereas administrative figures must be related to the financial year.

An interesting feature of this report is a note on the Comparative Mortality Index (C.M.I.). Dr. Stocks's work on the C.M.I., which now takes the place of the standardized death rate in the reports of the Registrar-General, is the subject of an annotation in this issue at p. 772.

Vital Statistics

The birth rate, which had reached 17.7 per thousand living in 1944, the highest rate since 1926, declined to 15.9. Live births, which reached the low total of 580,000 in 1933, increasing to 621,000 in 1938, and to a peak of 751,000 in 1944, declined to a total for 1945 of 679,937.

The death rate was 11.4 as against 11.6 in 1944 and the *civilian* death rate, which included violent deaths of civilians due to the operations of war, was 12.6 per thousand compared with an average rate of 12.7 for the three preceding years. The principal causes of death were much the same as in previous years. Diseases of the heart and circulatory system and old age took first place—33.1%, followed by cancer (15.2%), bronchitis, pneumonia, etc. (11.4%), and vascular intracranial lesions (10.7%). These figures show again a slight increase in the proportions and numbers of deaths due to diseases most prevalent in old age. This reflects the fact that persons over 65 in 1945 comprised 10% of the population as compared with 9% in 1939.

Infant mortality was 46.0 per thousand related live births, a rate slightly above the 45.4 of 1944 but well below that of any preceding year. Stillbirths comprised 28 per thousand of all births in 1945—the same proportion as that for 1944.

Comparing the corrected notifications with those for 1944, the incidence of scarlet fever decreased by one-fifth. The same applied to diphtheria, and whooping-cough among children aged 1–5 declined by 30%. There were more than three times as many cases of measles at ages under 5 and a fourfold increase in acute poliomyelitis among infants under one year. Dysentery notifications increased by 28% and cerebrospinal fever notifications declined by 9%.

General Epidemiology

Deaths due to influenza (2,686) were the lowest recorded for thirty years. Deaths due to diphtheria (722) were less than one-quarter of those in 1938. By the end of 1945 it was estimated that 58% of the children in England and Wales had been immunized, a figure said to correspond with that reached in the U.S.A. in 1936. There were 40,000 more cases of measles than in any previous year since notification began in 1940. There were, however, only 729 deaths among the

[1] *Report of the Ministry of Health for the Year Ended 31st March, 1946*, including the Report of the Chief Medical Officer on the State of the Public Health for the year ended 31st December, 1945. London: H.M.S.O. 3s. 6d.

446,796 notifications, giving the extraordinarily low fatality rate of 0.16%. The average fatality rate for measles used to be reckoned at 4%.

The 62,691 cases of whooping-cough had a fatality rate of 1.09%. The year saw a continuance of the relative freedom from typhoid fever (301 cases with 47 deaths), but there was again an increase in the notifications of dysentery (16,278). *Sh. sonnei* was the cause of 87% of cases and the remainder were due to eight or nine types of *Sh. flexneri*. There were 62 cases of amoebic dysentery, all from overseas.

Some 434 outbreaks of food poisoning were investigated and 389 of them were apparently due to salmonella infection. The danger of consuming duck eggs not sterilized by thorough cooking was again apparent. Attention was drawn to this point in a recent leading article in the *Journal* (April 5, p. 456). In other outbreaks dried egg, meat pies, brawn, pressed beef, ice-cream, and raw milk were responsible for conveying a variety of organisms.

During the year there were 515 imported and 7 indigenous cases of malaria. All the latter were benign tertian cases and the insect vector was *A. maculipennis*.

The downward trend of tuberculosis mortality has been resumed after a rise during the middle years of the war. Eighteen mass radiography units operating during the year examined some 800,000 people. Between 3 and 4 per thousand were shown to have active pulmonary tuberculosis previously unsuspected.

The incidence of early syphilis and gonorrhoea increased appreciably. In both diseases the increase was more marked in males. Thus in early syphilis the percentage increases in males and females were 18.9 and 12.0; the corresponding figures for gonorrhoea were 32.4 and 14.3. Congenital syphilis in infants under one year decreased from 345 in 1944 to 326. The number of persons attending clinics for examination and found not to be suffering from venereal disease was 84,954. The total of cases of V.D. dealt with for the first time at any centre was 50,143 as against 43,849 in 1944.

Maternity and Child Welfare

Despite the high pressure on available beds, the shortage of nursing and other staff, and difficult conditions generally, the maternal mortality rate continued to decline and reached the lowest level ever recorded: 1.80 per thousand total births, compared with 1.92 in 1944. If deaths following abortions are excluded the rate was 1.47 per thousand total births. In addition that portion of the rate (0.24 compared with 0.28 in 1944) attributable to deaths from infection during childbirth and the puerperium was the lowest ever recorded.

What used to be called "the uptake" now appears as "the acceptance-rate" of vitamin supplements for expectant mothers and children. In the country as a whole only 25% of the cod-liver oil available was used by the mothers, and approximately 42% of the orange juice.

Food and Nutrition

Surveys of the clinical state of nutrition of various groups of the population continued during the year and "no definite evidence of existing deficiency disease was observed in any person." Vitamin feeding tests in Stoke-on-Trent and Salford were completed and, like similar tests conducted previously, show that "in school-children and in adults with diets of average wartime quality, the addition of supplements of vitamin A, B_1, nicotinic acid, riboflavine, ascorbic acid, or calciferol is not needed."

Hospital Surveys

Of special interest in this report is the review of the ten hospital surveys of 1945.

The many defects of our hospital system were not fully appreciated before the war. The surveys reveal a serious deficiency in beds (not numerically stated in all the reports, but estimated by the writer of the Nuffield Trust publication at not less than 40%) and the obsolescence of a high proportion of the existing hospital buildings. Many of these are crowded on inadequate and noisy sites in the centre of towns, with poor accommodation for nursing and domestic staffs, and little or no room for expansion. Such structural defects must wait until much of the still more urgent need to build houses has been met.

The shortage and maldistribution of specialists is a second principal defect, which needs time, care, and keen foresight to rectify. Akin to this is the need for more special centres, which have proved so invaluable in the Emergency Medical Services.

Attention is also drawn to "the reproach of masses of undiagnosed and untreated cases of chronic type which litter our public assistance institutions."

Other sections of the report are concerned with rehabilitation; hospital planning and construction; and hospital catering. Medical man-power is discussed at some length, and there are separate sections on the Insurance Regional Medical Service, the dental services, and the nursing services. The serious shortage of nursing and domestic staff continued to react unfavourably on the efficiency of almost all classes of hospitals.

HEALTH COMMITTEES

Need for Co-ordination

The Minister of Health has again emphasized the need for the close and continued co-ordination of the local health authorities' services, under Part III of the National Health Service Act, 1946, with the general medical services and with the hospital and specialist services. A recent circular (94/47 of May 22) states: "Such co-ordination cannot be achieved unless the health committee includes proper representation of the medical profession in the area, and the appropriate body to consult for this purpose is the local medical committee referred to in section 32 of the Act." Pending the election and recognition of new local medical committees, the Minister hopes that local authorities will consult existing medical committees which he has already recognized for the purpose of medical appointments to local executive councils. Regulations relating to these executive councils were put forward recently (*Journal*, May 24, p. 731).

Some local authorities have not yet constituted a health committee in accordance with the provisions of Part II of the Fourth Schedule to the Act. The circular reiterates that all matters relating to the discharge of the functions of local health authorities must be referred to the health committee, and such committees must be properly constituted before effective progress can be made. The setting up of a health committee should not be deferred until executive councils and hospital management committees are in being and able to suggest representatives who can be co-opted. These additions to the initial membership of the health committee can be made at any time. In those areas where an *ad hoc* committee has been working out plans, it would be in order for the local health authority to appoint the members of this committee to be the health committee for the time being. Modifications of membership, if thought desirable, could then be made later.

GIFT FROM THE AMERICAN COLLEGE OF SURGEONS

The President of the American College of Surgeons, Dr. Irvin Abell, has sent Sir Alfred Webb-Johnson a cheque bringing the total contribution of that College to the restoration of the English College to over £10,000, and a brochure recording the names and addresses of the Fellows of the American College who have contributed to this memorable gift is being prepared. It may be recalled that the Great Mace of the American College was given by the consulting surgeons of the British Army in memory of mutual work and good-fellowship in the war of 1914–18.

In the course of his letter to Sir Alfred Webb-Johnson, Dr. Abell writes: "From its founding in 1913 the American College of Surgeons has been benefited by its cordial relations with the Royal College of Surgeons of England, after which it was in many respects patterned. Sir Rickman Godlee, a nephew of Lord Lister, was president of the English College in 1913, and he personally represented his organization at the inaugural convocation of the American College of Surgeons, presented an official message of greeting, good wishes, and hope, and was received into Honorary Fellowship in the newborn College. Since that eventful occasion many mutual interests have

strengthened the bonds between the two organizations and their individual members."

The American College will make a presentation of a desk and lectern for the lecture theatre of the English College during the Congress of the International Society of Surgery to be held in London in September of this year.

THE OLD PEOPLE

Mr. B. Seebohm Rowntree, chairman of the Nuffield Foundation Committee of Inquiry into the Problems of Ageing and the Care of Old People, addressed the British Federation of Social Workers in London the other day. Mr. Rowntree told his audience that there are five and a half million old people (that is, people of pensionable age—men over 65 and women over 60). They represent 12.5% of the population, and in fifty years' time it is estimated that they may represent 19%. Of these old people at least 95% live independently in private homes; only 63,000 live in institutions controlled by local authorities—mostly, of course, though not entirely, public assistance institutions—and an unknown number live in homes run by voluntary agencies. The problem concerns the 95% who live in private homes, alone, or with their families or with strangers. The Nuffield Committee has made a survey in certain sample towns—Wolverhampton, Oldham, two London boroughs (St. Pancras and Wandsworth), and the Rhondda Valley. An earlier social survey of York, of wider scope, has also added to the information.

On the whole the housing of old people is not worse than that of other people of their social class, but a good many are badly housed. In Wolverhampton, for example, in the homes of the old people which were surveyed, the closets were out of doors in one-third of the cases, a thing which may mean no particular hardship in the case of the young and vigorous, but is a very real hardship for the old and infirm, especially in the winter months. In Wolverhampton, Oldham, and York nearly 8% of the men and 15% of the women live alone, and in the two London boroughs 18% of the men and 29% of the women. In the Rhondda Valley there is a much stronger family feeling, and the number of old people who live alone is very small.

In mentioning the special needs of old people Mr. Rowntree placed first a greatly increased provision of nursing care. In the Rhondda Valley there is one district nurse for a population of 30,000. Another great need is the institution of clubs to mitigate the loneliness of old people, especially the old men. No district in the country ought to be without its old people's club. Finally he emphasized the need for communal homes to accommodate some such number as 30 or 35 old people. The greatest evil of old age is not infirmity but loneliness. A special committee of the British Medical Association is considering the care and treatment of the elderly and infirm, and its report will no doubt include this aspect as well as others.

SOCIAL MEDICINE AT OXFORD

The Institute of Social Medicine at Oxford has issued its second annual report. The staff of the Institute now numbers 17, under the directorship of Prof. John A. Ryle. The principal departments are the clinical and radiographic sections and the section of vital statistics. A child health survey is continuing; one aspect of it is a study of congenital defects and, more particularly, cardiac murmurs recorded during the first year of life. The radiographic anatomy of the infant heart in general is being studied. Progress has also been made in the analysis of records of the growth and maturation of bone. Among the findings observed is the fact that in the first year of life the growth in the length of the bones is equal in the two sexes, but growth in width is much greater in the male. Maturation in the female is in advance of that in the male. Furthermore, it has been shown that there is in general some correlation between growth in one part of the body and growth in another, but the correlations between measurements in different parts of the same region are no closer than between those in different regions of the body. It has been possible to draw a clear distinction between local and general factors influencing both growth and maturation.

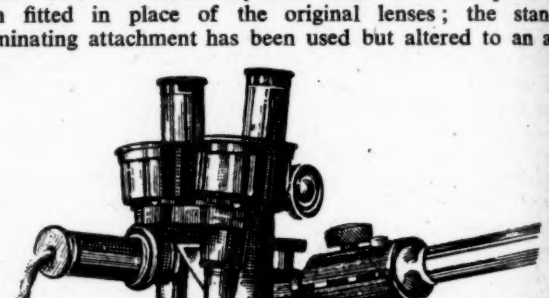
Another activity has been a close study of the many variables in the radiographic anatomy of the child's chest in the first year of life. About 3% of healthy children have been found to show a large mass projecting into one or both lung fields. Its nature has not yet been determined with certainty, but it probably represents the thymus gland. An analysis has been made of the spines of cretins with particular reference to the wedge deformities of the vertebrae at the dorsi-lumbar junction. These deformities have also been noted in several other conditions, showing that they are not specifically related to cretinism, and are almost certainly the result of either weak musculature or structural weakness in bone. The primary cause of the deformity seems to be the flexed intrauterine position. A study of fifty consecutive cases of newborn babies revealed that similar but less marked changes might be present in normal children at birth, and more recently a series of examinations of foetal spines has shown that the same deformity may be observed as early as the sixteenth week.

Other investigations concern peptic ulcer in industry, fluorine hazards, goitre, and iodine prophylaxis, and the stillbirth rate in relation to social and nutritional factors.

Preparations and Appliances

OPERATING MICROSCOPE

Mr. A. BROWNLIE SMITH, Assistant Surgeon, Ear, Nose, and Throat Department, Royal Infirmary, Edinburgh, writes: At the present time there is a demand by aural surgeons for a microscope of long working distance for use in the surgery of the labyrinth. Details of a microscope which can be purchased now may be of interest. The instrument is a Beck "Binomax" binocular microscope to which some alterations have been made. Two new small objective lenses of 13 dioptres have been fitted in place of the original lenses; the standard illuminating attachment has been used but altered to an angle



of 90 degrees and the light reflected by means of a small mirror placed at an angle of 45 degrees between the objectives. By these modifications the working distance has been increased from 4 to 9 inches (10 to 22 cm.), and the position of the mirror has enabled good illumination to be obtained even in the depths of a narrow cavity such as the external auditory meatus. The alteration of the working distance has necessitated diminished convergence of the objective lenses and, in this type of instrument, has been carried out by the insertion of small wedges in the body of the microscope. The modifications carried out give a binocular microscope with a working distance of 9 inches, a magnification of 8 with the low-power eye-pieces, and a field 1 inch (2.5 cm.) in diameter. There is good depth of focus and the illumination provided by a 12-volt lamp is sufficient for most purposes. The stand is fitted with two ball-and-socket joints and can easily be clamped in position on the operating table. A small sterilizable rod can be fitted to the milled knob for focusing purposes. I have now used the microscope for six months with various modifications of the light and lenses, and find the instrument described perfectly satisfactory.

The "Binomax" microscope and stand is made by R. and J. Beck, Ltd., London, and the alterations were carried out by G. Hutchison and Sons, of Edinburgh.

Reports of Societies

HYPERTENSION

At a joint meeting of the Liverpool Medical Institution and the Manchester Medical Society held in Manchester on March 5, with Prof. D. DOUGAL in the chair, there was a discussion on hypertension.

Dr. E. T. BAKER-BATES said that despite the fact that hypertension had been recognized for a century our knowledge of this leading cause of death was far from satisfactory. Hypertension could be produced experimentally by procedures that induced renal ischaemia. The significant conclusion was that hypertension could *per se* produce those vascular changes in the kidney and other organs formerly believed to be of inflammatory origin (Bright's disease). A vicious circle thus became established. On rare occasions this hypothesis had been confirmed in man by observing the relief of hypertension following removal of a diseased kidney. It now appeared that hypertension resulted from sustained arteriolar constriction brought about by a chemical agent (renin) liberated from ischaemic renal tissue.

The clinician must always satisfy himself that the patient's symptoms were due to a raised blood pressure. Neglect of this principle had caused much unnecessary invalidism. Treatment remained unsatisfactory. In the majority of cases guidance of the patient to ensure a reasonable attitude towards the condition was all that was possible or necessary. Excessive zeal was undesirable and often induced an anxiety state.

In recent studies, carried out independently in America and England, 33 preparations reputed to be capable of lowering the blood pressure did not produce significant reduction in a single case. Efforts should be made to keep the blood pressure as low as possible by restriction of activities, without making the patient an invalid. Sedatives, such as bromides or barbiturates, were indicated when there were nervousness, headaches, worry, or restlessness, but treatment by prolonged rest in bed, purgation, venesection, diet, baths, and diathermy was of negligible value. An artificial reduction in the blood pressure often made the patient feel worse. Finally, in no other chronic and progressive malady were common sense and insight into the weaknesses and fears of human nature more essential.

Limitations of Surgery

Mr. R. EDWARDS considered that, since the fundamental cause of essential hypertension was still quite unknown, any direct surgical attack upon the disease was not practicable at the moment, except in two instances: paroxysmal hypertension due to an adrenaline-secreting tumour, and rare cases of unilateral renal disease. There were two factors maintaining the hypertensive state: spasm in the first place and later sclerosis. If spasm could be controlled the sclerosis might be delayed. Vascular spasm could be relieved by division of the sympathetic nervous system. Division of the splanchnic nerves produced an extensive area of vasodilatation. This area could be increased by division also of the lower part of the dorsal sympathetic chain and the upper part of the lumbar sympathetic chain. This was the method Smithwick suggested. Adson, Craig, and Peet were content with a more limited operation.

The degree of spasm was best studied by the administration of thiopentone until a deep narcosis was produced, the blood pressure being recorded as each 1 ml. was administered. Full renal investigation was important. If considerable renal dysfunction was found it was unlikely that sympathectomy would benefit the patient, and sympathectomy was also of little value if cerebral damage was present. A history of coronary occlusion or anginal attacks did not contraindicate operation. Sympathectomy should not be performed in patients with a systolic pressure under 200 mm. or a diastolic pressure of under 100 mm. Hg; but this opinion might be changed in view of the considerable success obtained in America with patients showing a lower blood pressure.

The operation was done on each side with an interval of two to three weeks between the operations. The anaesthetic used was of little moment so long as controlled respiration was maintained, since the pleura might be entered at any time. The first 10 of his own 35 cases were treated by subdiaphragmatic splanchnicectomy, but severe and intractable post-operative vomiting led to its discontinuance. These were cases of advanced malignant hypertension in young people and the operations were performed some four years ago; all these patients were probably dead.

In the remaining 25 operations he resected the tenth and eleventh ribs posteriorly and removed a long section of the great splanchnic nerve and the sympathetic chain from the seventh dorsal ganglion down to the twelfth. An anterior transpleural approach suggested by Prof. Boyd had been utilized lately and this was an improvement on the posterior method. Delayed results were obtained in 16 cases; the remainder were too recent for assessment. There was a good immediate fall in blood pressure with a gradual rise in the succeeding months, but usually not to the original level. In a small number of cases the blood pressure had remained well down. In nearly all cases headache had been permanently relieved. The operation was not a cure for hypertension but was of considerable therapeutic value in selected cases.

Familial Factors

Prof. ROBERT PLATT disagreed with some of the points made by the previous speakers. In essential hypertension psychological causes and food and drink played no part in aetiology. So-called menopausal hypertension was not due to the menopause but was discovered at that time because menopausal symptoms led to the blood pressure being taken. In these cases the hypertension did not diminish later on. The most important factor in essential hypertension was familial. More than 90% of cases in which the data were obtainable had a history of hypertension in one or both parents—it was a Mendelian dominant. In secondary hypertension the familial pattern was entirely different.

He considered that malignant and benign hypertension were the same disease and had the same hereditary background. Cases of so-called malignant hypertension in young persons were nearly always secondary to urological disease. In assessing the value of surgical treatment he said that unless the diastolic pressure was reduced to below 110 mm. the prognosis was probably unaltered. The headaches could be relieved by medical treatment.

Prof. GEOFFREY JEFFERSON said that in his patients the blood pressure did not fall very much afterwards (the diastolic pressure very rarely going below 110 mm.) and in nearly all cases the blood pressure rose again later. Of 12 of his recent cases only two did reasonably well. One, a child whose blood pressure fell from 180/120 mm. to 120/80 mm. after two years, was still very unwell. The second was a young woman whose vision returned, with a blood pressure of 155/110 mm., two years later. He doubted whether these poor results justified the extensive surgical procedure necessary.

Prof. A. M. BOYD referred to his experience with Adson's operation. This gave some symptomatic relief but there was persistence of the hyperpiesis after six months. He had been using the transpleural approach, the double operation being very extensive. He thought that cyclopropane was the best anaesthetic to use, and said that after this operation it was necessary to remove the pleural effusions once or twice.

Prof. C. WELLS referred to his few cases done recently. He felt that sympathectomy was not the complete answer since it did not cure hypertension, but he thought that it might relieve the patient of some of his symptoms and so make life more bearable for a few months.

The Danish Medical Society has organized a comprehensive scheme of research with regard to penicillin, and in *Nordisk Medicin* for March 21 many pages (716–738) are devoted to some of the most recent Danish experiences in this field. Dr. N. B. Krarup points out here that continuous intravenous and intramuscular injections of penicillin have not found great favour in Denmark, where the procedure usually preferred is the intramuscular injection every third hour. The treatment of 21 cases of diphtheria with penicillin was not very encouraging, but the results in cases of scarlet fever at the Blegdam Fever Hospital have been remarkably good.

Correspondence

Physical Therapy of Mental Disorder

SIR,—Dr. D. W. Winnicott's onslaught (May 17, p. 688) on electric convulsion treatment and those who practise it appears to me to contain more fallacies than most psychiatric literature, and that is saying a good deal. What he says boils down to this: that he doesn't like E.C.T. because it is empirical. The empiricism I admit frankly, but I call his objection prejudice. When he starts to "condense" the vague and woolly sentimentality of his first two columns, he summarizes his objections as follows: (1) "I would not have it done to myself." This amounts merely to an admission of prejudice. (2) "It draws to psychiatry the wrong kind of doctors . . ." This comes to exactly the same thing, besides being arrant nonsense anyhow. (3) "It undermines the public's justification for relying on doctors to keep their scientific heads . . ." So far as this sentence has any meaning it is just as devoid of foundation as (2), of which it is merely a repetition. (4) "This form of therapy done here in England leads to mass treatments by the same methods . . . all over the world." This is an indictment of the whole medical profession outside England for which I see no justification and in which I perceive no truth. (5) "Physical methods of treatment represent a tendency away from scientific psychology." This is merely a reaffirmation of prejudice, not a fresh argument at all.

Now, Sir, I have no pretensions to being a psychologist. I took on psychiatric work for six years during the war as a means of putting such medical experience as I possess at the service of the country during the national emergency. As luck would have it I did a lot of E.C.T. treatment—about 9,000+ treatments of about 300 patients. I don't think I ever saw a cure of a genuine case of schizophrenia, but I did see a number of cases of marked improvement, mostly temporary. I am quite certain that it either caused, or at least greatly accelerated, recovery in nearly all my cases of puerperal insanity. I am equally certain that it really cured a small proportion of cases of melancholia and that this cure was apparently permanent.

I want to put to Dr. Winnicott a case of mine which was by no means an isolated one, but perhaps more inveterate than most others. This was a schizophrenic woman in the thirties who, when not under treatment, was foul and degraded in all her habits, passing urine and faeces into her clothing or her bed. She was destructive of the hospital property, and violently hostile to nursing staff, whom she would often wantonly attack. She was quite unemployable in any way, very difficult to feed, and miserably emaciated. She had been like this for some years when I began to give her E.C.T. After a course of this she became amenable to ward routine, clean and tidy in her habits, capable of needlework, and gained weight because she consented to eat. After a few weeks' cessation of treatment she would gradually slide back into her former state, from which she was rescued by a further course of E.C.T. This sequence of improvement and relapse went on for over two years, and for all I know may be going on still. If Dr. Winnicott or any other psychiatrist maintains that E.C.T. was not justified by its results in this and many similar cases which I saw, merely because the rationale of its action cannot be explained on any scientific hypothesis, so much the worse for the insane and for the psychiatrists. I hold no brief for E.C.T., and I deplore the exaggerations about it which immature psychiatrists have published; but at least I am sure that until something better can be devised it ought to be recognized as a valuable weapon in the treatment of (carefully selected cases of) insanity.—I am, etc.,

Tunbridge Wells. HENRY ROBINSON.

SIR,—I should like to answer Dr. D. W. Winnicott's attack on physical methods of treatment in psychiatry (May 17, p. 688) with the following observations:

1. Dr. Winnicott admits that he has a personal prejudice against physical therapy; surely prejudice, personal or otherwise, should have no place in the mind of a scientifically trained man.

2. He makes two grossly inaccurate statements—namely, "Convulsion therapy is purely empirical. No one has the slightest idea how it works, when it does work." There is an increasing mass of evidence, as a result of biochemical investigations of brain chemistry and its abnormalities in the diseases under consideration, that they are organic brain disorders in which the underlying lesion is a disturbance of the oxygen-glucose metabolism of the brain tissues. In this connexion, I would refer Dr. Winnicott to my article on the shock-therapies and their mechanism (*J. ment. Sci.*, 1944, 90, 550).

3. Dr. Winnicott completely ignores the fact that all the great therapeutic advances of the last fifty years have been the discovery of specific physical and pharmacological agents—e.g., insulin, the sulphonamides, penicillin, and so on.

4. His criticisms are entirely destructive, and he does not offer any satisfactory alternatives to the treatments which he so sweepingly condemns.

5. His remarks regarding "magic" and "magical treatments" are surely misplaced. The earliest forms of "magical treatment" employed by primitive man before medicine became a science consisted of psychotherapy in the form of suggestion and persuasion; they are depicted in the paintings of Stone Age man, and are used by the tribal medicine-man among savage peoples to-day, differing in few essentials from the methods of some present-day advocates of psychotherapy.

6. He completely ignores the undoubtedly striking results obtained by modern physical treatments in the major mental disorders, all of which are completely refractory to psychotherapeutic methods. Would Dr. Winnicott, in accordance with his theories, advocate that patients with general paresis should be treated by psycho-analysis rather than by malarial and penicillin therapy?

Finally, as one who has worked for a number of years in modern mental hospitals, I can assure Dr. Winnicott that it is not physical treatments but the working conditions in these institutions which deter the right type of doctors from taking up this line of work as a career.—I am, etc.,

London, S.E.6. G. TAYLEUR STOCKINGS.

SIR,—I was most impressed by the article on the above subject by Dr. Winnicott (May 17, p. 688), whose feelings towards these forms of therapy I share. My own experience is small, being confined practically to E.C.T. in the treatment of venereophobia, but his article encourages me to give it for what it is worth.

The venereophobe, it must be borne in mind, is almost invariably a man of high ethical standards—a decent, respectable, and respected citizen—who, when at the end of his tether, browned-off, homesick, depressed by what he'd already gone through, and viewing the immediate future with complete despair, got drunk and sought comfort and oblivion in the arms of the local Circe. This is followed by overwhelming remorse and the conviction that he has become infected. Clinical examination and reassurance by specialists, the ocular demonstration of negative blood-test results, cannot shake his conviction. He comes to psychiatric treatment depressed, obsessed, and more often latently suicidal than is comfortable for his medical officers. He has ruined his life, blotted his copy-book, blasted his domestic bliss, and there is no health in him.

Under my hands psychiatric interviews, narco-analysis, occupational and diversional therapy met with such total and invariable failure that even I was impressed. Group therapy was illuminating inasmuch as each patient in a group of venereophobes could appreciate that his fellows were in fact uninfected and ought to accept reassurance on this point, but each insisted that he himself was the exception; so it did not do much good. In despair and with great reluctance I came eventually to hand my cases one by one over to the electrocutioner, and I was struck (and inwardly dismayed) by the gratifying results. After the first treatment, patients who had been wont to mope about in corners I heard whistling in the corridors and joining in the singing in the ward kitchen. They asked for more of these treatments, feeling that it was doing them good. They did not lose their phobia at once. First of all they found themselves forgetting it for hours at a stretch.

They could lose themselves in a movie or at their occupational therapy. The phobia, although still present in the background, had lost its power to hurt so deeply. I never heard a patient claim that he was cured completely. He would say, "I think I shall get over it in time now." These patients did not know that they were being subjected to convulsions. They had had "pentothal" sessions previously and were allowed to believe that the electric current produced a similar "sleep treatment." It may sound profoundly silly, but I could only account for the curative effect of E.C.T. in these cases somewhat on these lines: "Here are these chaps whose super-ego (part of which I am told dwells in the unconscious) cannot forgive them for their lapses from virtue. They feel they deserve syphilis and they insist on having their deserts. They insist on punishment. E.C.T. supplies that alternative punishment which gives their unconscious just the kick in the pants that it is seeking." This curious hypothesis gained colour from the fact that patients who actually do get infected rarely develop venereophobia, which they could show by refusing to believe themselves cured when smears, W.R.s, etc., were eventually pronounced negative. Granted that some of the obsessional "potential-venereophobe" type occasionally do get infected, one might assume that these lucky ones accept V.D. as their punishment, treatment as penance, and the final negative tests as absolution. (I say "lucky ones," because I know no condition of suffering so dire or so 24-hours-a-day as that of venereophobia.)

I do not see (*pace* Dr. Winnicott) why E.C.T. should be equated with death any more than sleep or narcosis should be. I feel that it is equated with punishment; and I shouldn't be a bit surprised if many of the more disagreeable but successful orthodox surgical procedures owe their success in part to a similar somato-psychic exchange.—I am, etc.,

Mundesley, Norfolk. GEORGE DAY.

SIR,—I would like to endorse most heartily Dr. D. W. Winnicott's article (May 17, p. 688). I was one of the first to use the E.C.T. treatment in Eire outside of the mental hospitals, early in 1943, and could have added considerably to my income as a psychotherapist thereby had I not quickly realized that its use was merely another attempt to short-cut cure and did nothing to solve the patient's real problems. I was later required to use E.C.T. in a mental hospital for a year, and I became fully convinced that any change which resulted was psychological, and frequently only temporary, and tended to obscure the real issue of the causes of the patient's disappointment and despair. I clearly recall two so-called menopausal depressives who were elevated to apparent normality, and who quietly committed suicide within a year.

I came to regard the E.C.T. switch as a whip in the hands of the operator which could be of value when the patient had intellectually come to a knowledge of his or her problems but was very fearful of taking the necessary steps to solve them. A whip, however, is not a scientific instrument. Need one add more?

Pari passu, Dr. J. Dunne, the medical superintendent of the Grangegorman Mental Hospital, Dublin, informed me in 1944 that their statistics showed that the relapse rate after insulin treatment for schizophrenia was greater than among those left to recover spontaneously. Grangegorman Hospital had the staff to continue treatment all through the war, so that their statistics were to some point.

E.C.T. and insulin treatment appear to be first cousins, if not full relations.—I am, etc.,

Stockton-on-Tees. L. F. DONNAN.

SIR,—In his paper on the physical therapy of mental disorder (May 17, p. 688) Dr. D. W. Winnicott says "No one has the slightest idea how it works." I can't help wondering whether this is because, expecting complexity, the explanation is actually so simple that it has been disregarded. I believe the prototype of the therapy can be seen in the customary and familiar treatment of a minor hysterical disturbance by a severe sharp admonition. Sometimes slapping the face is recommended or even a douche of cold water. The important thing is to *shock* the patient by the unsympathetic treatment received from the external world. Clearly such simple measures would not suffice for the graver psychoneuroses or depressions. I think the principle is the same, but it has to be properly checked up. A pail of water can't be emptied on an unhappy head by appointment. But it is different with E.C.T. Little is done to mitigate the patient's apprehensions. It may be better to augment them. In any event the convulsion is unpleasant enough—truly an unsympathetic external world. The contributory help of the "suggestive" value of electrical treatment or insulin or whatever it may be should not be underestimated. Ultimately one has to depend on the body's spontaneous power to restore itself. Nothing can be put in by E.C.T. or psychotherapy that was not there before. It is useless to treat a mental defective by these methods.

The value of physical treatment to set working innate powers may be seen in the successful manipulation of an inert, flaccid, white, and asphyxiated newborn baby. Nobody who has seen such a one quickly change into a pink bundle of loveliness will ever forget the transformation. But nothing has been done except to stimulate the infant to work as it was meant to, and this is generally as far as interference should go. So with convulsion treatment; the best it can do is to push the patient on to the right road without doing any harm. The psychoanalyst can do no more. He often won't do as much.

The search for first causes is vain. It has not prevented the use of the sulphonamides or penicillin, although their mode of action is not clear. If the physical therapy of mental disorder, shorn of such horrible excrescences as leucotomy, can help, it should not be discouraged. Even it might be worth while to extend it to the treatment of the amorphous miscellany of chronic diseases. It might take the place of the various kinds of "shock treatment"—T.A.B., intramuscular injections of milk, malaria, and the rest—the idea being to jerk the natural powers of restoration into activity where the changes are not irreversible, and it is surprising how often they are not.—I am, etc.,

London, S.W.1. E. GALLOP.

SIR,—Empiricism is like a red rag to a scientific bull according to Dr. D. W. Winnicott, whose paper, "Physical Therapy of Mental Disorder" (May 17, p. 688), will undoubtedly stimulate considerable discussion. It is clear that Dr. Winnicott is opposed to empirical treatment, yet he admits that "scientists regard empiricism as a stimulus to research" and that "convulsive therapy attracts to mental hospitals people with first-rate qualifications." He stresses that "the doctor is expected to represent science or objectivity," but the title of his original talk was "Some Reasons for a Personal Prejudice against the so-called Physical Therapies of Mental Disorder." How can he reconcile his medical responsibility to be *objective* with his avowed personal prejudice? He suggests that his approach to the problem of physical therapy may be unscientific, but condones his attitude "as a suitable one in the case of such unscientific methods of treating the disordered mind." Surely he does not expect to convince anyone by being unscientific about the unscientific.

If we were condemned to *understand* before we *acted*, our instinctive responses would find no expression and many of us would thereby fail to survive until such time as we had managed to acquire experience and psychological insight. May we not justifiably equate empirical therapy with our instincts, which we subsequently endeavour to harmonize with our environment? Stability, maturity, and understanding do normally accrue. Science was evolved from the study of items and phenomena, and our knowledge has been derived as much from the observation of the extant as from the development of an idea or the investigation of a theory. Empiricism has its place in modern therapeutics. Those who decry it for such few measures as can be reconciled with absolute scientific criteria are confining themselves in a therapeutic wilderness and failing in their duty to suffering humanity.

For many years the treatment of mental disorders consisted of confinement in an institution, physical restraint, and forcible feeding when necessary, and the exhibition of crude sedatives. The therapeutic approach of alienists was just as negativistic as were the clinical signs of some of their patients. Small wonder that quasi-physical measures of an empirical nature were enthusiastically adopted by the successors of that unhappy and frustrated generation. Nevertheless, over-optimism and

precipitate recourse to therapy which is not understood must be guarded against, and the older orthodox methods must not be discarded too readily because it is easier "to press a button." Let empiricism proceed along scientific lines, and let us avoid its becoming the whipping-boy of those colleagues whose unconscious guilt (over therapeutic impotence) determines a sanctimonious resistance to therapeutic innovation.—I am, etc.,

London, W.1. ELLIS STUNGO.

SIR,—The restatement on a systematic basis of arguments which have led Dr. D. W. Winnicott (May 17, p. 688) to become a fervent opponent to physical therapy in mental disorder deserves a thorough consideration on its merits. Physical therapy in mental disorder is deprecated and stigmatized as being "unscientific" and encouraging the belief in "magic."

It is doubtful whether some of the summary statements advanced by Dr. Winnicott on this subject will come to hold a place of distinction in the realm of science. ". . . Mental disorder is a disorder of emotional development. . ." Does Dr. Winnicott exclude from mental disorder degenerative processes (arteriosclerotic and senile) or toxic-infectious psychoses (such as puerperal, choreic, and others) or the post-encephalitic personality changes? ". . . False theories are built around the assumption that the mechanism by which change is brought about is a physical one. . ." Dr. Winnicott's view seems to be firmly encapsulated in a closed system of mental causality which does not allow for interaction with physico-chemical agencies and ignores the dynamics of psychosomatic unity. None of the great psychological theoreticians who have laid the foundations of mental science (Kraepelin, Janet, Bleuler, Freud) would ever have adhered to such a dogmatic view. Changes brought about in the brain by electrical shocks cannot be fundamentally different from changes produced by chemical agents like alcohol, insulin, benzedrine, etc. Dr. Winnicott might as well extend his wrath to include also narco-analysis, which proved so helpful in restoring the psychiatric casualties of the battlefield much quicker than any psycho-analyst could have undertaken. If links are missing in the hypothetical structure underlying physical treatment in mental disorder, it does not mean that such a hypothetical structure must be dropped as valueless. Hypothesis and scientific exploration are necessary correlates.

Not less detrimental than ill-considered summary statements is the monopolizing tendency shown in Dr. Winnicott's identification of "scientific psychology" with psycho-analysis to the exclusion of any other approach. In order to proceed scientifically attempts would have to be made at a confrontation of sufficient numbers of cases which have failed on E.C.T. and have responded to psycho-analysis with those in which the result was reversed, accompanied by a thorough investigation of all factors involved (not excluding psychological "epiphenomena" connected with "submission" to shock treatment). It will be one of the tasks of the regional centres of psychiatric research, to the establishment of which we are looking forward and the existence of which is indeed a desideratum of a high order, to arrange comprehensive and statistically significant investigations into the relative merits of various forms of psychiatric treatment.

While Dr. Winnicott points out the fearful reactions of patients to E.C.T., he forgets to mention that the revelations of psycho-analysis in the form of Oedipus, castration, anal, and similar complexes are not always highly enjoyable. In speaking of leucotomy as a "quack cure" (only recently recommended—in cautious terms—by the Board of Control) he does not shy at a slur on a great number of contemporaries. If personal testimony is of any value, I can assure Dr. Winnicott that in giving E.C.T. and advocating leucotomy in carefully selected cases I have never felt that I have allowed myself to deviate one inch from the principles of scientific psychology nor from a humanistic approach to the roots of human existence.

There is, however, one good point in Dr. Winnicott's Cassandra call. The fact that the more or less formidable armamentarium of modern psychiatry might be placed into the hands of young doctors soon after qualification who, lacking a basic psychological education, might use the new methods in a too mechanical way, thereby assuming decisions over the fates of sometimes "very valuable" people, calls for a constant and ever increasing vigilance in matters of psychiatric education. Dr. Winnicott deplores a tendency "away" from scientific psychology, but, alas, there has not been a sufficient tendency as yet, among the rank and file of psychiatrists, to move "towards" a scientific psychology. Psychiatry, now feeling rich and powerful by constantly widening its boundaries, will in the end have to give a proper place again to its present Cinderella, psychopathology, which is the theoretical and experimental exploration of the fundamental dynamics of mental processes in states varying from the normal. Only on the basis of such a non-dogmatic foundation of psychiatry shall we arrive at, and finally present, a balanced view of practical methods and their results.—I am, etc.,

Sedgefield, Durham. STEPHEN KRAUSS.

Tuberculosis and Diabetes Mellitus

SIR,—I read with interest and agreement the article by Drs. W. R. Gauld and A. Lyall on "Tuberculosis as a Complication of Diabetes Mellitus" (May 17, p. 677) and was sorry to find in it no mention of what, in England at any rate, constitutes one of our greatest problems in the treatment of diabetics with tuberculosis. In most sanatoria there is a lamentable absence of provisions for the proper management of diabetes, both in respect of trained staff and dietetic and laboratory facilities. As a result the advantages of good treatment of the tuberculosis are more than outweighed by the disadvantages of poor control of the diabetes. Experience has taught me that it is often better to keep the patient at home under the care of the tuberculosis officer and a good diabetic clinic than to send him or her to a sanatorium where the all-important control of the diabetes is likely to be forgotten, ignored, or, more often, just not understood.

The solution of this problem lies in the establishment in each region of at least one sanatorium in which there should be all the necessary facilities for the maintenance of good diabetic control and to which all tuberculous diabetics in the region could be referred for treatment.—I am, etc.,

Diabetic Department, King's College Hospital. WILFRID OAKLEY.

De Morgan's Spots

SIR,—May I congratulate Capt. A. R. Murison, Lieut. J. W. Sutherland, and Flying Officer A. M. Williamson with regard to their article (May 10, p. 634) on Campbell De Morgan's spots, which, so far as I am aware, is the only critical analysis yet published dealing with their relationship to cancer. The dearth of literature on the subject is curious considering that they are often remarked upon, and there is unfortunately an abundance of material available for examination. Your contributors may be interested to read an account of De Morgan's spots or "plaques de Morgan" by Dr. A. T. Brand, of Driffield, published in the *British Medical Journal* in 1902.[1] Brand strongly supported their connexion with malignant disease and called them "canceroderms"; his views, however, are unsupported by any statistical evidence.

It might be thought that there would at least be no difference of opinion about their histology, but Sir John Bland-Sutton, discussing[2] the structure of De Morgan's spots, said, "They are patches of pigment, not naevi." With this in mind I once excised and examined a number of the spots but could find no trace of pigment. Their structure is that of a capillary haemangioma.—I am, etc.,

Sheffield. LOUIS A. IVES.

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2 Bland-Sutton, Sir J. (1922). *Tumours Innocent and Malignant*, 7th ed., p. 12. London.

Pemphigus Vulgaris

SIR,—I have under my care a very severe case of pemphigus vulgaris. In a recent article in the *Archives of Dermatology* successful results are reported after transfusion with blood from persons who have recovered from the disease. Though it is not proved that the success was due to specific properties of these sera, I feel it imperative to try the method, if it can possibly be achieved, in view of the extremely grave prognosis. If, therefore, any doctors know of the whereabouts of any patients that have recovered from true pemphigus vulgaris,

should be most grateful if they would send me full particulars of the cases and ask the patient to communicate with: The Blood Transfusion Officer, University College Hospital, Gower Street, London, W.C.1 (Euston 5050).—I am, etc.,

London, W.1. W. N. GOLDSMITH.

Water and Salt Depletion

SIR,—There are some reactions affecting the distribution of salt which seem to need further study. After the masterly presentation of the role of salt in the body by Dr. H. L. Marriott (Feb. 15, March 8 and 15) one hesitates to intervene and can only plead interest as an apology. The reactions in question involve the little-explored field of the absorption thresholds of colloids for different concentrations of electrolytes. To illustrate: Gelatin placed in cold water swells. If salt be added gradually the gelatin continues to swell until a critical point is reached; then if more salt be added it will abstract water from the gelatin. Finally the salters' process is reached, used for centuries to cure skins. The significant points are that for each concentration of the electrolyte there is a different degree of absorption, and when this is active the force developed against resistance is very great. This pressure is masked in the body by elasticity in the tissues. In an organ with a capsule, like the kidney, it is greater; the rock is split. Evidently the force of colloidal absorption cannot be ignored.

Its action in the body is shown when oxyhaemoglobin is converted into the carboxy form. This causes the venous blood to absorb from 5 to 10% of its bulk of water, aiding the venous circulation and that of the tissue fluid. The water is released in the lung and excreted mainly by the kidney. That the absorptive capacity of the colloid is not exhausted is shown by the fact that in cases of suffocation the bulk of the venous blood is increased by 30%.

The typical cell is stated to retain potassium and phosphorus, but contains little salt although bathed constantly by a solution of it. The differences in the other types of cell must be due to some extent to the colloids they contain. The admission cells of the kidney pass most electrolytes in solution but refuse feebly ionizable proteins and neutral glucose. The conservation cells of the organ absorb water and salt, which they return to the blood freely, but refuse all other constituents of primary urine. Why does the colloid of one cell combine with potassium which another refuses? Why does the earth retain potassium while salt is washed into the sea? Apparent suspension of the laws of osmosis is evident in different reactions. During life the cell excretes actively but when dead ceases to do so but absorbs avidly. Why is osmosis active in dead cells but not in the living? Why does the cancer cell absorb so rapidly as to cause pressure which favours cell division?

If a red blood cell be filled with molecules the extent of its internal surface can be expressed in square metres. As electronic change is interatomic rather than between molecules, the area at which surface interchange, the base of chemical action, can take place is very great. Considering the diversity of action in the cell, which is so small that we know but little about it, it must be the seat of intense activity, much of which must be maintained by colloidal surface. The little-explored field of colloid absorption does seem to need investigation.—I am, etc.,

Montreal. RICHARD KERRY.

Prognosis in Acute Nephritis

SIR,—Several statements are made in the interesting survey (April 5, p. 457) of Rudebeck's important paper on the prognosis in acute nephritis that seem to me to require qualification and upon which I would venture to comment.

After remarking that the prognosis must be guarded if residual symptoms are present on discharge from hospital (with which I agree), it is stated that if they (i.e., residual symptoms) persist for more than one year, or are severe, chronic nephritis may confidently be awaited. With this I cannot agree. In the paper by me cited in the annotation and by Rudebeck I referred to 586 patients with war nephritis in whom residual symptoms persisted for from one to ten years after the onset, all of whom eventually recovered completely. While the majority cleared up spontaneously in the earlier part of this period, in 14 patients residual signs finally disappeared only in the ninth and tenth years after the onset.

It is, I believe, generally agreed that the prognosis in war nephritis differed little if at all from that in glomerulo-nephritis in civilians of comparable ages. In the past twenty-five years I have certainly seen quite a number of civilian patients of all ages in whom residual signs persisted for years who eventually recovered completely as judged by standards not less rigorous than those used by Rudebeck. On the other hand the proportion of patients suffering from latent or, as I prefer to call it, "unresolved" nephritis that ultimately recover is undoubtedly small. Those who do recover are fortunate exceptions. Nor in my experience is it correct to assert or to imply that chronic nephritis inevitably ensues when residual symptoms are severe, for I have often seen patients recover completely with appropriate treatment who were suffering from massive albuminuria with anasarca and ascites that had persisted for more than a year after the onset of the disease and before treatment was instituted.

It is not necessarily, in my view, the severity of the residual symptoms that determines the issue, but their nature. When they include hypertension or diminished renal function, however slight, and these persist for a year, and often for less than a year, it is a very different story. It is doubtful if complete recovery ever then occurs. I believe that hope of eventual complete recovery should never be abandoned however long residual signs persist, provided these do not include hypertension or diminished renal function, especially the former. The continuance for more than three or four months after the onset of considerable and undiminishing numbers of red blood cells in the urine is also in my experience a sign of grave import.

The second point to which I would refer concerns the effects of prolonged bed rest on the ultimate prognosis in this disease. In referring to Rudebeck's conclusions it is stated in the annotation that "it could not be proved that the prognosis was any better if the patient was kept at rest (i.e., in bed) for long periods." On consulting the original paper, however, I find that only 50 of the patients in Rudebeck's series were confined to bed for more than ninety days and only 7 for between six and nine months. Seven patients in the series were regarded as cured on discharge (not those who were confined to bed for the longest periods), and 43 were classified as not completely recovered. Concerning the latter Rudebeck remarks: "... among the non-recovered cases we also meet with many in which bed rest may be designated as insufficient." I entirely agree.

Observations extending over many years, but particularly during the past five years in the Renal Unit at Pembury, where it is possible to keep patients in bed as long as is considered necessary, indicate that complete recovery from unresolved nephritis results more often than is commonly supposed from treatment in which prolonged confinement to bed is probably the most important factor. In many patients six to nine months' carefully regulated bed rest is not the maximum but the minimum period required to achieve success. So far as I am aware the potentialities of prolonged and accurately controlled bed rest in renal diseases have not previously been systematically exploited on any adequate scale. The effects are, of course, quite different from those seen in patients who languish in bed in their own homes or in hospitals where bed rest is prescribed more or less as a matter of routine. Our experience at Pembury, where the objective evaluation of the effects of this measure has been a main line of research for some years, indicates that it may well prove to be as important in the treatment of unresolved nephritis and some other forms of renal disease as it is in pulmonary tuberculosis, for example. That prolonged and properly controlled bed rest for from six to fifteen or twenty months is sometimes the only means of procuring complete and lasting recovery in unresolved nephritis I have no doubt, though there is little to suggest that this measure will prove successful in more than a small proportion of these cases. In the absence of any speedier or better method of treatment it seems right to urge that patients suffering from unresolved nephritis should be given the chance of permanent recovery, however slender, that adequate bed rest occasionally offers.—I am, etc.,

Pembury, Kent. A. A. OSMAN.

State Medical Service in New Zealand

SIR,—Sir Ernest Graham-Little (May 3, p. 611) quotes a paragraph from an article by Mr. A. E. Porritt in the *St. Mary's Hospital Gazette*, 1947, **53**, 54, as a warning against any form of national medical service. I have now obtained the last two numbers of this gazette and find that this quotation is a single paragraph taken from one of two long articles describing Mr. Porritt's travels in America and New Zealand. They are obviously written to amuse and instruct his students. I should imagine that the last thing Mr. Porritt expected or desired was that any part would be removed from the obscurity of an almost private publication and publicized as serious political or medical comment.

As one who has spent four months in that delightful and friendly Dominion during the same autumn when Mr. Porritt paid his shorter visit, I understand what was in his mind when he wrote that paragraph and I should be surprised if he did not now regret having expressed himself so tersely that it allows of his being quoted in a sense which I feel sure is not his true appraisement of the medical position in New Zealand.

Let me take Mr. Porritt's criticisms in detail:

(*a*) "a slightly improved all-round service for the public during business hours. To get a doctor in New Zealand after 6 p.m. and over week-ends is not an enviable task."

This is really commendation of the service with criticism of the number of doctors who administer it. To a large extent this criticism is true. Now that the doctor's fee, or part of it, is paid by the Government, there has been a great increase in the number of people seeking medical advice, and, unfortunately, this Act came into operation while many of the profession were in the Services. The result has been great pressure upon those practitioners still in practice, but this position will rectify itself as the number of these increases.

(*b*) "a definite falling off in the standard of medical practice both from ethical and clinical viewpoints. This is the consensus of opinion from all branches of the profession. . ."

Having so recently visited New Zealand I know what is in Mr. Porritt's mind, though I think he would have expressed it differently if he had intended it to be made more public, as I feel sure that he was regaled with stories of the activities of certain practitioners just as I was. Ethically every country has its black sheep, but I found that these stories, told in every centre, generally referred to the same small group of practitioners, and finally I came to the conclusion that New Zealand has a smaller percentage of black sheep than we have to endure. Clinically New Zealand practitioners, consultant and general, have the same high standards as always; both the clinical and ethical failures referred to the same small group. I only wish ours was as small.

(*c*) "a growing and already appreciable dearth of specialists, and this in a country where the proportion of men taking higher degrees was previously exceptionally high."

Here again I imagine that brevity has failed to express the true state of affairs. In most hospital appointments I think that there are just as many well-trained candidates as in the past. It is true that there is a dearth of specialists in certain branches, notoriously in my own, but this is due to the ancient method of hospital administration, which fails to create the necessary posts, and this is unrelated to the Social Security Act.

What I think Mr. Porritt has in mind is that there may be a dearth of well-trained men in the future, as at the present time newly qualified men are tempted to rush into general practice, where they can immediately make what to them is a large private income, rather than devote years to postgraduate training and the obtaining of higher diplomas. This is well recognized by those responsible for medical education in New Zealand and is a cause of anxiety. Apart, however, from any action to be taken by the authorities, this condition will gradually rectify itself as the number of general practitioners increases and patients again have greater freedom in the choice of doctors.

Like all new large schemes social security in New Zealand has much to be commended and probably much to be amended, and it seemed to me that professional anxiety was chiefly as to the form amendments would take. Of one thing I can assure Sir Ernest Graham-Little, the general practitioner in New Zealand would view with consternation the complete cancellation of the medical part of this Act. It will be understood that any opinion expressed in this letter refers only to New Zealand and its Medical Service.—I am, etc.,

Manchester. WM. FLETCHER SHAW.

Classification of Tuberculous Patients

SIR,—For a long time workers in tuberculosis have been awaiting an authoritative lead from the Ministry of Health in the matter of classification of the disease at the time of diagnosis and also regarding assessment of the results of treatment. Local authorities and others are now informed that the Minister has decided to adopt recommendations made to him by the Joint Tuberculosis Council, which are issued as a substitute to Section I of the Appendix to Memorandum 37/T (revised).*

Cases to be classified "quiescent" after treatment are described, in part, as those "in which no tubercle bacilli have been found on three consecutive monthly examinations by stained film." It would be of considerable help to one tuberculosis worker if the Joint Tuberculosis Council or the Ministry of Health would indicate precisely, or even vaguely, what they are talking about. Do they refer to sputum examined by any staining method and anybody? Do they accept a specimen of saliva from which pus is absent as suitable material for examination? Do they recognize that pulmohary secretions which are not projected forward beyond the posterior third of the tongue are swallowed? Is it their intention to ignore for the purpose of future classification the fact that more precise methods of search for tubercle bacilli exist and are in everyday use? If so, the inference seems plain enough—that it is not possible, in their view, to eliminate all tubercle bacilli from secretions, and we are to rely for prognosis on a crude and discredited investigation.—I am, etc.,

Henley-on-Thames. HARLEY E. STEVENS.

* Printed in the *Supplement*, p. 111, of this issue.—ED., *B.M.J.*

Day Nurseries

SIR,—Those members of the profession who are interested in the practical, as distinct from the theoretical, aspects of the care of children in nurseries seem to be doomed to recurrent disappointment in our hopes for really useful and dispassionate information. Dr. McLaughlin's paper (May 3 and 10, pp. 591, 631) began well and promised just the kind of information which is needed, but it declined in its later stages into a mere restatement of the obvious without any attempt to evaluate the findings which were stated.

Dr. McLaughlin certainly deserves congratulation on one point; she has tried better than her predecessors to obtain figures which are statistically valid. Even so, allowance ought to be made for two factors which will bring about a certain amount of selection in the "Nursery" and "Home" groups. A considerable proportion of nursery children come from homes in which there exists economic necessity for the mother to work. It is not improbable that those children have had a less satisfactory start in life than the "Home" group. Further, it would appear that something like 10% or 15% of the "Home" children failed to attend for examination; it is not unreasonable to assume that the absentees were largely the children of the more careless parents and that a group of children who might have pulled down the "Home" averages was missing.

This investigation, like those which have preceded it, pays attention to nasopharyngeal infections and the incidence of tonsillar enlargement. Surely it is time that we learned to be realistic in considering these two conditions. Tonsillar enlargement is becoming generally recognized as of no pathological importance in itself. There is, moreover, every reason to believe that it occurs as a part of the child's normal development of immunity. In more than a dozen years' experience of work with nursery, nursery school, and nursery class children I have found tonsillar enlargement to be a constant phenomenon which appears on a child's first admission to group life, whether this happens at the age of 2 or the age of 5, and which gradually disappears as he becomes habituated to dealing with infections. Almost equally common is a phase of recurrent minor respiratory infections, lasting between six and eighteen months and then disappearing.

So far, in fact, as respiratory infections are concerned, the effect of nursery life is simply to anticipate an inevitable

occurrence of childhood. This may be unimportant or it may not, but it cannot be dismissed as bad without further evidence. What is the later history of the nursery child? Surely we need to know whether there is any evidence of lasting later damage before we attach any importance to the increased incidence of these infections. A similar criticism may be applied to Dr. McLaughlin's comments on measles. Obviously the aggregation of children during a measles epidemic will increase infection. But it is futile merely to say, as Dr. McLaughlin does, that "this is particularly important in view of the greater mortality rate of measles in young infants and the greater risk of serious complications." Did the 111 nursery children with measles show a greater than average rate of mortality and complications? If not, the greater incidence of infection loses its importance.

Every investigation of the health of nursery children so far carried out has been subject to two fallacies. The first is the assumption that a medico-social problem can be solved in terms of clinical medicine alone: the fact that the social aspects of nursery life are difficult to evaluate is no reason for ignoring them. The second is the comparison of the nursery child with the child from a normal home: true comparison would lie between the nursery and the home which would house the particular child if the nursery were not there. Perhaps 50% of nursery children would, if the nursery were not available, have to live in home surroundings of a grossly unsatisfactory character. Nurseries are a social remedy for social ills. Presumably what we need to know is whether the remedy is, in fact, worse than the continued toleration of the ills and what more satisfactory remedies can be found. Even such a thorough and workmanlike piece of research as Dr. McLaughlin has produced will be comparatively sterile unless its application to these practical problems is pursued.—I am, etc.,

Colchester. JOHN D. KERSHAW.

SIR,—Your leading article of May 10 (p. 644) on day nurseries reflects the attitude of many recently published articles and letters. As the mother of a child who has attended a day nursery, and having worked in one myself, I am hesitant to become an advocate of any system which tends to sever the relationship between mother and child, but it should be borne in mind that a large percentage of mothers taking advantage of available day nurseries are wholly or partly responsible for the financial cost of the child's upbringing. This may arise because (*a*) the child is illegitimate and the putative father unknown; (*b*) the father is dead and the mother not in receipt of a pension, or the pension afforded to her is inadequate in view of the high cost of living; (*c*) the father has deserted the mother and falls in arrear with his payments towards their keep. I know of many cases where the endeavour to trace the husband and to seek legal aid for the recovery of arrears or to re-establish the allotment is beyond the capability of the mother. I would add to these those instances where the husband's earnings are inadequate and the mother has real need to supplement his income with her own earnings.

If day nurseries are not available to such mothers the only alternative is to find a foster-mother, and whereas an intelligent nursery worker can supply the child's needs during the day with affection and sympathy without impairing the child's relationship with its mother, a foster-mother often accepts the charge either for financial gain or because she has no children of her own and finds an outlet for her maternal instinct. The former reason and its effect on the stability of the child's environment need no comment. The latter is fraught with difficulties, and in many instances the foster-mother receives the child's affection and the mother becomes a tolerated visitor.

Unmarried mothers to-day can arrange to have their babies adopted, and there are numerous children's homes willing to admit destitute children, but the mother who chooses to keep and maintain her child is worthy of consideration. Some nurseries have waiting-lists of children for admission, and the mothers suffer very real hardship while unable to work. Is it not possible to give priority to those mothers who have real need to work rather than to those who desire to escape maternal responsibilities for less harrowing work in factories?—I am, etc.,

Liverpool. MARGARET WIGFIELD.

The Revolution in Anaesthesia

SIR,—With the letters of Drs. Massey Dawkins and H. W. Loftus Dale (May 10, p. 654) it is to be hoped that the trumpet has sounded the retreat from the indiscriminate use of curare by anaesthetists. Common sense and common professional prudence may now return. It has indeed been disconcerting to hear of this highly lethal drug being used, with no other excuse than that it facilitates the passage of endotracheal tubes, for operations requiring little muscular relaxation at all.

Surgical shock has not changed its nature since the administration of curare has become all too common. The degree of shock a patient suffers from a surgical operation depends on many factors, but the chief of these remain: (*a*) the patient; (*b*) what is done to him; (*c*) how it is done and by whom. Under the latter head come both surgeon and anaesthetist.

It is common experience to find that of two sailors falling into a dry dock while returning to their ship after dark the drunker (and more relaxed) sustains less shock and fewer fractures. Nevertheless he will die if the fall has been far enough, even if he be both "pentothalized" and "curarized" before taking the plunge. This lamentable truth applies also to the patient's plunge into anaesthesia, that "little death," and into surgery, especially the exploratory type of surgery which so often becomes a boisterous rummaging into what was once called the sacred temple of the human spirit. We all know the surgeon whose cry is "Iron them out," and we have all at times wondered whether he would really be happier with his head inside or whether he is better playing a querulous tune with the parietal peritoneum as his banjo string.

When a bull is loosed in a china shop it is fortunate if a few of the more valuable pieces have been kept on the high shelves. Only thus can complete wreckage be avoided. The bovine comparison cannot, we must admit, be confined to the surgical fraternity. One correspondent points out that the only case of shock he recalls when using curare was when he inadvertently failed to notice that his soda-lime absorber was not functioning. It is fair comment to remind him that, had he not been using curare as a short-cut solution of his relaxation problem, the fact that he was submitting his patient to auto-intoxication in addition to the exogenous poisons could scarcely have escaped his attention.

Curare is a great help in the special case, but I beg leave to doubt whether surgical and anaesthetic techniques have improved with its indiscriminate use—on the contrary, humans being what we are. This drug is indeed a milestone in anaesthesia, but do not let us allow it to produce irreversible relaxation in *too* many patients who might well have survived had it remained in the South American blow-pipes.—I am, etc.,

Derby. ANDREW G. HEGARTY.

Spinal Anaesthesia

SIR,—Regarding your interesting comments on this subject in your current issue (May 10, p. 647), may I be permitted to advance a purely personal theory, entirely without laboratory or indeed any kind of scientific support, that appears to me to be relevant? It is this. No mention is made regarding the normal procedure, adopted by myself over many years and, I think, the majority of anaesthetists of (alas) the older school, of snicking the skin with a scalpel (after the introduction of the ordinary preliminary local anaesthetic, with or without adrenaline or whatever it may be) before the introduction of the needle. I submit, Sir, that unless this precautionary measure is adequately carried out, there is every danger of the needle failing to make an absolutely clean puncture and acting after the manner of a cork borer, carrying into the theca a minute piece of skin, with disastrous results despite the most painstaking routine sterilization.

I write, Sir, purely in the light of long personal experience and in the entire absence of any kind of supporting evidence. But the idea is well worth while bringing forward by the courtesy of your columns, especially to-day, when most of us are using worn and blunted instruments with badly fitting and bevelled obturators that would appear to invite trouble.—I am, etc.,

Worthing, Sussex. O. P. CLARK.

Penicillin

SIR,—Recently you have made annotations on the dosage of penicillin (April 19, p. 536) and the lack of immunization in infections treated early by this drug (May 10, p. 648). In both cases, I think, there is shown a feeling of disappointment that recurrences sometimes occur and show that infection has not been completely eradicated by large doses of penicillin. This view is due to an unreasonable dependence on drug treatment alone. When the drug is in direct contact with sensitive bacteria it is effective in very small quantities, so that the large amounts injected by Dr. D. P. Wheatley (April 19, p. 530) for styes, boils, etc., are very wasteful although convenient for ambulant patients.

It is likely that some bacteria escape the direct action of the drug in all cases, and the risk of these causing lesions later depends on their numbers and the patient's resistance by serum and tissues. The danger is greatest when living organisms are left in unobserved positions and when resistance is low. Increasing dosage is not enough; on the other hand, delaying administration so that the immunity processes may be stimulated is dangerous in serious infections and is uncontrolled and is likely to be ineffective when resistance is poor. Penicillin should be used in solutions or powder locally if important lesions can be reached, and dosage should allow for absorption into the general circulation if necessary (Florey, M. E., *et al.*, *Lancet*, 1946, 2, 405). As an alternative, if no local lesion is prominent, or additionally if required, systemic injection of the drug may be needed. It is very important that, if lesions recur, latent primary sources of infection should be sought actively and drained or surgically removed and that resistance should be increased by vaccines, non-specific protein therapy, injections of arsenic, or other means. To rely too much on penicillin can bring discredit to the drug and the doctor, but a more careful use of it will reveal the immense problem of people whose susceptibility is very great to small numbers of organisms which reach them from outside or have remained from previous illness.—I am, etc.,

London, N.19. J. M. ALSTON.

Vaginal Operations

SIR,—I would like to point out that Dr. J. H. Hannan in his letter headed "Vaginal Operations" (May 3, p. 614) made a statement which is not, I am afraid, in accordance with the facts. He says ". . . carcinoma of the vaginal portion of the cervix only occurs in women who have been pregnant . . ."

Two series of published figures will be enough to prove this point: (1) Fricke, R. E. (*Proc. Staff Meetings Mayo Clinic*, 1939, 14, 705): A series of 108 "stump" carcinomata, 21% of which were in women who had never been pregnant. (2) Hurdon, E. (*Cancer of the Uterus*, London, 1942). There is a graph on p. 3 showing the mortality rate for England and Wales in cases of cancer of the uterus at different age groups, single and married women being graphed separately. (There is a footnote pointing out that about 90% of these are cervical cases.) At nearly every age group the cases in single women are about half the number in married women (rather less in the lower age groups).—I am, etc.,

Manchester. T. F. REDMAN.

Cows' Milk and Rheumatism

SIR,—When visiting the north of Scotland lately I met a veterinary surgeon of great acumen and well known for his skill in dealing with diseases of domestic animals, and was surprised to learn from him that cows are liable to acute rheumatic arthritis, with swollen joints, and that they may develop valvular affections of the heart. He added that he prescribed salicylate of soda in spoonful doses thrice daily for the disease.

I saw at once that if this were so we had a rational explanation of the disease in human beings, as cows' milk would readily convey the infection. I am not aware that this conception of the origin and spread of rheumatic fever is mentioned in any of the textbooks on medicine. Should my friend's observations and experience of acute rheumatism in cows be confirmed, we have here an important contribution to practical medicine; and the obvious conclusion is that every cow considered to be suffering from acute rheumatic arthritis should be reported to the medical officer of health, so that measures should be taken to abolish the infection. I have pleasure in stating that the name of my accomplished friend is Mr. Duncan Campbell, Veterinary Surgeon, Thurso, N.B.—I am, etc.,

Glasgow. JOHN T. MACLACHLAN.

Acid Drinks and Sulphonamide Therapy

SIR,—Dr. Petronella Potter in her letter (May 10, p. 654) recommends the prohibition of acid fruit drinks for patients on sulphonamide treatment to avoid renal complications. May I point out that her recommendation is based on the entirely erroneous conclusion that acidity of fruit juices leads to an increase of acidity in the urine? Rather, the opposite is the case. The acidity of fruit juices is due to weak organic acids which in the urine at the end of a metabolic process are excreted as alkaline carbonates and so increase the alkalinity of the urine. There is, therefore, no reason for depriving patients on sulphonamide treatment of these refreshing drinks.—I am, etc.,

Warwick. A. HOLZEL.

Handling of Food

SIR,—A question has been puzzling me for some time now, and recent events locally have brought it to my mind. It is this: How is it that the authorities, local and central, permit our food, particularly meat, to be handled as it is to-day?

I have always understood that the English public health laws have been among the finest, if not the finest, in the world, and that these laws lay down that meat must be delivered to the retailer in *clean* vehicles by men wearing *clean* washable caps, overalls, and aprons, and that the meat must be hung a certain minimum height from the floor in such a position that customers and passers-by do not come into contact with it. How is it then that one sees meat being delivered in vans that certainly do not look clean, by men wearing old serge uniforms and no aprons or overalls, and that it is dumped down in the corner of the shop on the floor?—I am, etc.,

Coventry. JOHN HALE POWER.

Another Name

SIR,—During this war in my experience in the Far East many "new" psychiatric conditions have been described, or perhaps these conditions were seen earlier than hitherto. The most dramatic of these is the "wartime schizophrenia"—an atypical and usually acute schizophrenia or schizoid episode which has a sudden onset and usually a happy ending brought on by E.C.T. or insulin therapy or the two combined. As part of this syndrome there is often a distressing awareness of mental illness. This awareness does not amount to psychological insight, which is defined by Arthur P. Noyes in his *Modern Clinical Psychiatry*, Philadelphia, 1939, as "an appreciation of the presumed motives and genesis of their [mental] symptoms . . . self-judgment and the degree to which his [patient's] experience is understandable to him, the manner and extent to which it is interfering with his social adjustment and the successful performance of his usual duties. . . ."

Though I am conscious of an already cumbersome psychiatric terminology, I feel that adding one further term covering "awareness of mental illness" as distinct from insight will be justified if it draws attention to the symptom and leads to adequate study. This awareness of mental illness is distressingly painful to the pyschotic, and the mental pain is usually relieved by "shock" therapy, but the awareness persists or, if not present before, it appears in retrospect and may lead to full psychological insight.

On a parallel with anosognosia—i.e., unawareness of physical disability—I think the term "abmengnosia" or, in short, "abmenosia," may be adopted. It is perhaps rather a clumsy, tongue-twisting word and a little irregular in its Latin, but until another is forthcoming it may serve its purpose.

I should be interested to hear what comments there are on this suggestion and whether it will be acceptable to medical nosology?—I am, etc.,

Poona. D. CAPPON.

Silence on the Act

SIR,—Yesterday I examined yet another week's *B.M.J.* without light or leading for ordinary members in the obscurity of their position. And to-day an instalment of regulations under the impending Health Act, No. 899, has come into my hands. They have, of course, the force of an Act of Parliament, though all that Parliament has likely seen of them is the printed cover as they "lay on the table." Thus the Ministry marches while the B.M.A. stays licking its wounds.

Will the B.M.A. please tell us at least something? Has all thought of a stand gone by the board? The panel system was the last relic of our freedom. Is the B.M.A. going to make a stand for it? The silence of the *Journal* is ominous. So are regulations 899, already "in force." They deal with two oddly assorted matters. They (1) invite a Local Medical Committee, among other bodies, to appoint an original member of the Executive Council of an Area and lay down the procedure of such Councils, and (2) deal with supplementary ophthalmic services.

The eight regulations under the second head perpetuate recognition of the old imperfect sight-testing arrangements and do nothing to advance those improvements in them which Bishop Harman, with devoted labour, introduced. The sixteen regulations under the first head, recognizing as they do that the Act is in being, invite us to take some immediate part in working it. Have we again deferred our decision to the eleventh hour?—I am, etc.,

Holmes Chapel, Cheshire. LIONEL JAS. PICTON.

Guidance in Certification

SIR,—The profession had some reason for believing that the principal motive of the Health Service measures contemplated in the Beveridge Report was the desire to control medical certificates in the interest of solvency of the National Insurance Act, which was the main objective of the Beveridge Report. Your editorial comments on the increased demand by every Government Department for medical certificates, illustrated by some of the trivial examples you quote, have rightly drawn attention to the burden this places upon the profession. But a still more serious development is foreshadowed by a question which appears in *Hansard* (May 15, 1947, column 174). A Labour back-bencher asks the Minister of Fuel and Power "what *guidance and instructions* [the italics are mine] he proposes to issue to the medical profession in connexion with the granting of medical certificates allowing the use of gas and electricity for space-heating purposes in residential premises." The Under Secretary was good enough in his answer to say that "he had no reason to suppose that the medical profession do not honourably carry out the heavy burdens which I am afraid we are obliged to impose upon them." But this answer did not satisfy the questioner, who, I fear, would be supported in these suspicions by a large section of the Labour Party.

The greatly increased powers conferred upon the Minister by the new Act would obviously intensify the danger to the profession that certification will in fact be directed and controlled from Whitehall, as exemplified by the remarkable admissions made by the Minister of Food with regard to the censorship by lay persons of medical certificates in the allocation of invalid diets.—I am, etc.,

House of Commons. E. GRAHAM-LITTLE.

No Divorce for Neurosis

SIR,—In the case reported under the heading "No Divorce for Neurosis" (April 12, p. 512) the legal argument is interesting. From a layman's viewpoint, however, if the wife applied for the separation order, and refused to return to her husband despite his letter and visits, surely she is the deserter and only he would be able later to sue for a divorce.

Neurosis can make normal cohabitation impossible. In insanity the law does not compel the partners to live together. Visits and "an affectionate and repentant letter" do not alter the experience nor the fear of days and nights of unreasonable behaviour to which there is no witness.—I am, etc.,

Newcastle-upon-Tyne. G. M. LANGHAM-HOBART.

POINTS FROM LETTERS

Toxicity of Iron Compounds

Dr. T. PIRES (Weston-super-Mare) writes: In reference to Dr. Violet Russell's communication (April 5, p. 465) if "massive" doses of iron salts are not indicated there is no reason to withhold *judicious* use of same. The treating of microcytic anaemia with iron is a useful therapeutic measure, whose benefit it may easily be harmful to withhold from patients by a general measure. The precaution to take in prescribing iron is to ensure that there is no constipation and that taking iron does not cause diarrhoea. In other cases there is real benefit from such treatment, especially in times when sulphonamide therapy is so universal a practice. I should like to know whether sodium sulphate (as stated by Mr. G. F. Somers in the same issue) is contained in Blaud's pill rather than sodium bicarbonate. As to vitamin concentrates, my finding is that the natural sources are more effective by oral therapy except in the case of vitamin A, perhaps on account of the deficiency of the latter in present-day diets.

Star-gazing

Dr. R. CHRISTOPHER HOWARD (London, W.1) writes: Among the minor improvements which might be made by a planned State would be the suppression of the widely disseminated nonsense misnamed astrology. . . . If we are the keepers of the public health, should we not as a profession protest against the publication of misleading balderdash, abjure the heresy that the fault lies not in ourselves but in our stars, and take a firm stand against suggestions that reward is not the result of endeavour? We may humbly and gladly admit the powerful reality of forces whose comprehension lies beyond our fallible power of reasoning, but *all* these can be integrated for good if, using the beautiful words of Cranmer, we pray that we may be granted those things which for our ignorance we cannot, and for our unworthiness we dare not, ask.

A "Medical Certificate"

Dr. E. ROLAND WILLIAMS (Clynderwen, Pem.) writes: I have before me a particularly objectionable example of the kind of form still used by some insurance companies when a patient submits a claim under a "sickness and accident" policy. The form is of the type which extracts from the practitioner, under the title of a "medical certificate," a report upon the patient as a "life"—a report which, unknowing to the patient, can be "used as evidence against him" when he is due to renew his policy, or, possibly, if he should seek a "life insurance." "The certificate" is, of course, "to be given at assured's expense." The claimant, a healthy young adult, has had an influenzal illness of moderate severity which has confined him to bed for a week and which will probably keep him from his work as a farmer for another week or ten days. He is not suffering from any other disease. One would think that, legitimately, those are the only facts that the company would need to have certified. But in the case of this company "it is very essential" (so the form reads) "that full particulars be given so that the Medical Officer of the Corporation may understand the exact nature and extent of the illness." So, to cast light into this medical officer's darkness, I am asked to certify at the outset the claimant's age, weight, and height. Yes, the weight and height of a patient ill in bed! Am I to presume that, if I should have a fulminating case of meningitis or pneumonia insured for sickness with this company, I am to cart along with me a portable weighing machine, get the patient out of bed on to it, weigh him, and also measure his height? If I do not do so, will the medical officer fail to understand "the exact nature and extent of the illness"? Then this medical certificate form proceeds to ask twenty-one questions in all about my patient ill with an ordinary epidemic "influenzal" pyrexia. Is he of sober and temperate habits? Has he suffered from cardiac affection, tuberculosis, gout, rheumatism, or fits of any kind? Are the teeth sound and is there any pyorrhoea? Of course the most objectionable feature of all is that the doctor feels that he must fill in this form so that his patient shall not suffer the loss of the payments due to him under his policy. The company therefore can reckon that the form will be filled in—and that they will have a free report on the patient as a "life."

Experiments on Human Beings

Dr. LOUISE FRASER (Dundee) writes: As one who has served abroad in both wars I cannot be accused of being a conscientious objector, having volunteered for service. May I suggest, then, that so-called "voluntary" medical experiments on conscientious objectors, prisoners in jails, and so forth are not ethical? The practice differs in degree, but not in principle, from the German prison-camp experiments.

Obituary

C. Y. PEARSON, M.D., F.R.C.S.

Charles Yelverton Pearson, emeritus professor of surgery of University College, Cork, died on May 13 at the age of 89. He had been on the staff of the College for fifty years when he retired in 1928.

Charles Pearson was born at Kilworth, Co. Cork, in 1857, and his early years were spent at Carrigaline where his father was medical officer. He entered Queen's College, Cork, at the age of 17 and spent a year in the Arts Faculty before changing over to medicine. He qualified in 1878 and was appointed senior demonstrator of anatomy. For six years he worked under the late Prof. J. J. Charles until in 1884 he was appointed professor of materia medica and lecturer in medical jurisprudence. He had already proceeded M.D., being awarded a gold medal, and he took the English F.R.C.S. in 1886. He had been appointed assistant surgeon to Cork North Charitable Infirmary a year previously and some years later he became the senior surgeon there. He was also on the staff of the County and City of Cork Victoria Hospital for Women and Children and of the Lying-in Hospital.

At this time he was medico-legal adviser to the Crown in criminal cases and in this capacity was involved in what became known as the "Coachford Poisoning Case" or the "Shandy Hall Case." The wife of a doctor in Dripsey had died in peculiar circumstances, and it was Dr. Pearson's evidence that led finally to a conviction for arsenic poisoning at the Munster Assizes in 1887. By the time he was 40, Charles Pearson had become professor of surgery at Queen's College, a position he continued to hold until 1928, when the University conferred upon him the title of emeritus professor. He was a member of the council of the University and of the senate of the National University of Ireland. In 1916 he succeeded the late Sir Charles Ball as honorary surgeon to the King in Ireland.

One of his daughters by his second marriage is now a medical student. His two sons are Dr. Charles B. Pearson of Cork, and Mr. William Pearson, professor of surgery, Dublin University. The sympathy of all who knew him as a skilled surgeon and a charming and likeable man will go out to his widow, his sons, and his daughters.

Dr. ROBERT ARTHUR HEATLEY, chief medical officer of the Bombay, Baroda, and Central Indian Railway, died in St. George's Hospital, Bombay, on April 8 after a short illness. He was 49 years of age. Dr. Heatley, who qualified in Dublin in 1925, joined the railway staff in the following year and spent the greater part of his service at the Railway Hospital in Ajmer. He acted as chief medical officer on more than one occasion and was confirmed in that appointment in November, 1946. He was a distinguished freemason, an honorary life member of the St. John Ambulance Association, and a member of the managing body of the Indian Red Cross Society. He had been a member of the British Medical Association for over twenty years.

Dr. SAMUEL EDWIN ALBERT ACHESON died in Belfast on April 14. Dr. Acheson started life as a pharmaceutical chemist and qualified from Queen's College, Belfast, in 1910. For many years he represented the medical committee in the Council of the Pharmaceutical Society of Northern Ireland. Dr. Acheson joined the British Medical Association in 1911; was chairman of the Belfast Division in 1929–31; a member of the Insurance Acts Committee from 1930 to the time of his death; and of the National Formulary Subcommittee in 1933 and 1937–8. He represented his constituency at nine Annual Representative Meetings from 1930 to 1938.

T. E. H. writes: He was a many-sided man, outstanding in every way, big in stature and big in heart. He ranked high in the masonic order. He was a great churchman and a great family man, and his passing is lamented.

Dr. ROBERT SANDERSON died on April 21, at the age of 91, at his home in Lancing, where he had lived since he retired from practice in Brighton. His father was Canon Sanderson, head master of Lancing College for many years. Educated at Lancing, Oxford, and the Westminster Hospital, Robert Sanderson qualified in 1883 and went into general practice two years later, but he soon began to specialize in gynaecology and became surgeon to the Brighton and Hove Hospital for Women. He was the first surgeon in Brighton to do a caesarean section. He proved a good general surgeon in the 1914–18 war, when he served as a captain, R.A.M.C., in the 2nd Eastern General Hospital and with the 55th General Hospital at Wimereux. He was elected president of the Brighton and Sussex Medico-Chirurgical Society in 1899, president of the Sussex Branch of the British Medical Association in 1920, and chairman of the Brighton Division in 1921–2. When the Association met at Brighton in 1913 he held office as president of the Section of Gynaecology and Obstetrics.

H. N. F. writes: Robert Sanderson, a man of lovable character and remarkable attainment, retired from practice long enough ago to be almost unknown to the younger generation. His rich humanity and unfailing regard for his patients' welfare brought him the reward of trust and affection. At the Sussex and the Brighton hospitals no one surpassed him in judgment and obstetrical skill. He seldom operated outside strictly gynaecological limits in civil practice, but he served on the surgical side in the 1914–18 war. His energy belied his years, for he was already over 60 when he went to France. Notwithstanding this, he took his full share in all the hospital's activities and even kept wicket for the officers, and generally opened the batting with the Irish padre, their combined ages being 110! Sanderson's charm and his many-sided interests made him a delightful companion. He was a scholar of distinction, an artist, and a musician of wide culture. One would like to dwell on his love of all sports, his sympathy with all young things and their aspirations, his ideally happy home and family, his calm and courageous acceptance of the inevitable when he realized that his days were numbered. His blithe and gay spirit remained with him to the end and he leaves a memory of high ideals, faithful service, and golden friendships.

ALAN GORDON ADRAIN died at the age of 47 in Durban on April 28 after a short illness. In 1928 he took the conjoint qualification as a student of St. Mary's Hospital and then became casualty officer at the Royal Northern Hospital. He spent all his clinical life in Northern Natal, first at Felixton and later at Stanger, where he was senior medical officer to the Hulett sugar estates. Adrain served throughout the recent war and was demobilized with the rank of Surgeon Lieutenant-Commander, S.A.N.F. He served afloat for a number of years and then returned to the Durban H.Q. at Tribune House as naval medical liaison and transport officer. He leaves a widow and two children.

Dr. ERNEST JERMYN HYNES died at the City Hospital, Plymouth, on April 29. He studied medicine at the London Hospital, obtaining the conjoint diploma in 1896, the D.P.H. in 1901, and the F.R.C.S.Ed. in 1905. He was in general practice at Leigh-on-Sea for some years after qualifying and then in the Isle of Skye, where he practised for five years before joining the public health department in Huddersfield on his appointment as resident medical superintendent of the Infectious Disease and Smallpox Hospital. He returned to general practice at Grassington-in-Wharfedale for a period of eight years, and during the first world war was a captain, R.A.M.C., serving at the Stoke Military Hospital, Devonport. In 1919 he joined the staff of the Plymouth public health department as superintendent of the City Isolation Hospital and venereal diseases medical officer, remaining in this appointment until he retired in 1936. Once again he took up general practice, this time in Plymouth, and he was working to within a few weeks of his death.

D. F. J. writes: Dr. Hynes was a remarkable man with a phenomenal knowledge of clinical medicine. Although possessing a surgical qualification, his whole interest was in pure medicine, not confined to his own specialty but covering the whole field. His advice was much sought after by his colleagues, especially where their own relatives and families were concerned. To work with him was a privilege. His charm of manner, his tolerance, and his kindness were proverbial, and he never tired of imparting, in characteristically modest fashion, his great knowledge to his juniors. He devoted his whole life to his work and was ever ready to help all those in distress. He never lost his temper even under the most trying circumstances, but latterly even his calm temperament was at times disturbed by the spate of forms and certificates which fall to the lot of the unfortunate practitioner of medicine. He disliked all official documents. Apart from his wholehearted devotion to medicine, he was a pioneer motor-cyclist and motorist, and a keen fisherman and photographer. He had an amazing know-

ledge of birds and animals. We in Plymouth shall miss him, for he was a favourite with us all, a gentleman, and a great doctor.

Dr. JOHN ROBINSON HARPER died in Barnstaple on April 30 at the age of 80. The eldest child of a family of thirteen, his youth was spent in Barnstaple, where his father, Dr. Joseph Harper, had been in practice for many years. He was educated at Blundell's School and later at St. Thomas's Hospital, where he qualified in 1890. Dr. Harper was house-surgeon and resident accoucheur at St. Thomas's before joining his father in general practice. For many years he was a keen Territorial, serving as surgeon-major in the North Devon Hussars. During the first world war he was twice mentioned in dispatches, and received the C.B.E. and the Order of Avis (Portugal), as well as the Territorial Decoration. In 1918 he commanded the 14th Stationary Hospital in France. After the war he was for many years honorary surgeon to the North Devon Infirmary and was on the consultant staff of that hospital when he died. He had been mayor of Barnstaple in 1911, and up to this date had filled the post of medical officer of health to the borough. After his mayoralty he continued to be M.O.H. to the rural district of Barnstaple, and in this capacity was responsible for much of the A.R.P. work during the second world war. As a member of the Devon county council, and later as county alderman, he was on the public health committee, and was chairman of the mental deficiency committee. Dr. Harper filled many other public posts with distinction. He had been a J.P. for many years and he was an active member of the British Medical Association for over forty years.

Dr. JOHN WILSON MILLER died on May 2 at his home in Lewisham at the age of 62. A student of Glasgow University, Dr. Miller qualified M.B., Ch.B. in 1907, and obtained the diploma in public health in 1910. After service in many Glasgow hospitals he was appointed in 1913 senior assistant medical officer of health and tuberculosis officer for the County of Lanark, a post he held for five years, except for one year's absence on military service as a lieutenant in the R.A.M.C. Dr. Miller also acted as medical officer of health for the Burgh of Hamilton for a period of fourteen months. In 1918 he became deputy medical officer of health for the metropolitan borough of Lewisham and he had been M.O.H. there from 1937 until failing health made him retire in 1946. Dr. Miller had been a member of the British Medical Association since 1911 and was chairman of the Lewisham Division for the years 1928–9 and 1936–7. In his early days at Lewisham he was the first medical officer in charge of the first municipal maternity home in the metropolitan area. Many Lewisham mothers still remember with gratitude his sympathetic and efficient care. During the ten years he was in charge no maternal death occurred in the maternity home at Rushey Green. Later as medical officer of health he launched in 1930 the "home help scheme," now recognized as one of the largest and most successful in the country. In 1935, largely through Dr. Miller's efforts, a general practitioners scheme for the immunization of children against diphtheria was brought into being and most successfully developed. A year later the first health centre in the borough was erected by the council and a modern tuberculosis dispensary built. During the war years the strain and responsibility of organizing and maintaining an extensive civil defence casualty service, which functioned smoothly and efficiently, contributed very materially to his breakdown. Dr. Miller had a subtle sense of humour and he was always courteous, modest, and considerate towards those who worked for and with him. He was a much loved chief and colleague.

WALTER WINGFIELD NUTTALL, of Folkestone, died on May 4 at the age of 80. Dr. Nuttall was a student of St. Bartholomew's Hospital. He qualified in 1892, and proceeded M.D. in 1908. He had retired from general practice some years before the outbreak of war, but he placed his services at the disposal of the War Office in September, 1939. In May, 1941, he accepted the position of medical officer of health for a wide district in East Kent. Although at the time of his appointment he was over 74 years of age, he immediately infused into his work a vigour and enthusiasm that earned for him the appreciation, and indeed the admiration, of his employing authorities. He reorganized the casualty services and ranged far and wide into the villages and hamlets of his scattered district. Approximately 100% of the children in his area were immunized against diphtheria by him personally. Dr. Nuttall was appointed a magistrate for the borough of Folkestone thirty years ago. Highly esteemed by his colleagues on the bench and deeply interested in the work, he relinquished it in 1940 so as to be able to concentrate all his strength and energy on the essential task of supervision of casualty and health services in his district. This devotion to duty lasted as long as life, and he carried out certain important official acts the night before his death. He was a man of high character and ability, tireless industry, and undaunted courage.—F. W.

Dr. CHARLES GORDON GIBSON died on May 4 at the age of 83 at his home in Launceston, where he had been actively engaged in practice up to the time of his retirement in 1941. Dr. Gibson qualified M.B., C.M. at Edinburgh in 1889. After serving as resident physician at Edinburgh Infirmary, and later as assistant medical officer at Kinross County Asylum, he came to Launceston in 1891. During the fifty years spent in practice he saw many changes. In the early days he used to travel by horseback to see his patients. His life was devoted to the practice of medicine, and night or day his patients came first. He possessed great clinical acumen and judgment and was greatly beloved. Apart from his professional abilities he was a man of great culture—a competent botanist, a keen astronomer, and a lover of the poets. Fittingly enough, Burns was his favourite, and he always retained a great love of his native Scotland. It was my privilege to be closely associated with him for some years, and I believe he was incapable of an unworthy or unkind thought or deed. At his passing many will remember with gratitude their contact with him.—R. E. A.

Medico-Legal

FAILURE OF A NATURE CURE

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

The deputy coroner for West Cumberland, Mr. W. H. Bayliff, held an inquest on March 14[1] into the death of a boy of 13 who was found at necropsy to be emaciated, with gross distension of the abdomen, prolapse of the rectum, general peritonitis, and chronic obstruction of the bowel due to intussusception.

Dr. T. F. Kirkpatrick, of Keswick, said in evidence that he had seen the boy first on Feb. 25, two days before his death. The father told him that the boy had been taken suddenly ill about the middle of December with severe sickness and diarrhoea, probably due to ice-cream. A few days later the lower part of the bowel had protruded slightly and gone back spontaneously, but afterwards it had protruded again to a greater extent and had remained prolapsed. On Dec. 28 the father had telephoned to a "naturopath" of Ayr, Mr. J. B. S. Jay, who had seen the boy twice and had afterwards conducted treatment by telephone, prescribing homoeopathic remedies. Until Feb. 18 the boy's bowels had moved spontaneously, but after that date there was no motion and he had taken nothing but sips of water. The doctor judged that the boy had probably developed a subacute obstruction at the beginning of his illness and that it had become complete on Feb. 18. He explained the gravity of the situation to the parents and said that surgery might have succeeded earlier but the boy was not now fit for it. They would not allow a consultant to be called, and asked him to communicate with Mr. Jay. He declined to do so, as it would have served no useful purpose. They refused his suggestion of removal to hospital. Next day he called again and found the boy's condition worse. The parents then agreed that he should go to hospital provided that no surgical treatment was given. After the boy's admission he had prescribed "nepenthe" to relieve pain. The boy had died next day. The conditions at home had been moderately good, but a patient in such a serious state should have had professional nursing attention. The parents had appeared to be anxious and in an agitated state. He had gathered that they had had "naturopathic" treatment for seventeen years, and that this was largely based on diet. Religion had not been mentioned. If the boy had received medical treatment in the early stages he would very probably have recovered. Cross-examined by counsel for the parents, he said their belief in "naturopathy" seemed genuine. He agreed that many patients were restored as much by warmth and rest as by orthodox medical treatment, and that in many

[1] *Cumberland and Westmorland Herald*, March 15, 1947.

cases "naturopaths" must seem successful because they kept their patients in bed and warm. The success of early surgical treatment would have depended on a correct diagnosis. The boy had had a convulsion during his first examination, and he had suggested the possibility of meningitis, but the parents would not allow lumbar puncture. In answer to Mr. Jay, he said that surgical treatment would probably have availed during the first few days after the prolapse appeared.

The pathologist, Dr. J. S. Faulds, of Carlisle Infirmary, agreed, and added that it would have been effective up to the period when the boy developed acute obstruction. If other advice had been obtained at the beginning the question of operation need not have arisen. He had not examined the brain. Questioned by Mr. Jay, he said that such a prolapse, once reduced, might recur if the diarrhoea continued, but not if it were cured.

After a warning by the coroner Mr. Jay decided not to give evidence, as also did the parents on legal advice. The coroner, summing up to the jury, said that as a matter of law the parents owed the boy the duty of providing him with food, clothing, and, if necessary, medical attention. Parents had in some cases been convicted of manslaughter for failing to call in medical aid for their children, but not every such failure amounted to manslaughter: there must be a breach of duty so gross as to amount to sheer criminal recklessness whether the child died or lived. Where a person, whether a qualified medical practitioner or not, held himself out as having skill in dealing with disease and undertook the care of a sick person, he owed a duty to the patient. The coroner pointed out that the parents had not neglected to get any treatment at all: mistakenly, the jury might think, they had brought in treatment of a sort, and had been very distressed at the boy's illness. They had called in Dr. Kirkpatrick at the finish, though unfortunately too late. There was no suggestion that any treatment by Mr. Jay had contributed to the boy's death; it was a case of lack of treatment appropriate to the particular condition.

The jury returned a verdict of death from natural causes, a contributory factor being the reluctance of the parents to provide earlier medical attention.

Dr. Kirkpatrick's conduct stands as a model for other practitioners faced with the same sort of difficulty. The cases in which any useful purpose could be served by the medical practitioner called in making contact with an unqualified person must be extremely rare.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The *Cambridge University Reporter* dated May 13 contains a report of the General Board on the establishment of certain additional posts in the Faculty of Medicine and on the further development of the School of Clinical Research and Postgraduate Teaching. The report, which occupies 3½ pages of the *Reporter*, is the result of representations made by the Board of the Faculty of Medicine earlier in the year and concludes with the following recommendations to the University:

I. That a Readership in Human Ecology be established from Oct. 1, 1947; that the pensionable stipend of the person appointed to this post be £950 a year, or £700 a year should he be a Fellow with dividend; and that from the same date the following be added to the Regulations for Readerships held under the Statutes of 1926 (*Ordinances*, p. 566): *Medicine*: Human Ecology.—The Reader shall not be a tutor, assistant tutor, bursar or assistant bursar, and shall not give instruction on behalf of a college or colleges for more than six hours a week.

II. That the head of the Department of Medicine be authorized to appoint, subject to the approval of the Faculty Board of Medicine, a senior health service officer, a junior health service officer, and a statistician to the Department of Medicine, with tenure not exceeding three years in the first instance; and that the stipends of these health service officers and of the statistician be determined, subject to the approval of the Financial Board, by the General Board after consultation with the Faculty Board of Medicine.

III. That the health service officers and the statistician to the Department of Medicine be recognized as officers of one of the departments of the Medical School for the purposes of the arrangement with Addenbrooke's Hospital (*Reporter*, p. 238).

The Financial Board offer no objection to the recommendations contained in this Report.

The following medical degrees were conferred on May 10:

M.D.—*In person*: J. A. Dudgeon, J. M. Naish, C. R. Morison, E. A. Pask.
M.B., B.CHIR.—*By proxy*: J. G. Kilner.

UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—[16]Joan D. M. Baker, [12,4]J. L. Gowans, [13]Sadie B. Michaels, [13]Margaret I. Morgan, [14]T. E. Oppé, [15,7]W. Peters, D. M. Abelson, Elizabeth J. Acton Davis, J. M. Allcock, G. T. Allen, A. W. Anderson, P. G. Artiaster, Ellen R. S. Armitage, A. R. Baines, S. Balfour-Lynn, R. L. H. Barnard, T. H. Barrie, J. Barrow, Olive E. Bartlett, J. G. Bearn, A. Bell, J. W. Bennett, J. W. Betts, E. P. Bharucha, M. D. Blend, H. J. G. Bloom, S. O. Boldy, P. A. Boxall, P. H. Brasher, F. B. Briggs, J. D. Broadbent, Jean F. C. Brown, W. E. Bryan, C. Bucknall, P. E. G. Burnett, N. G. P. Butler, Irene M. S. Cade, F. G. Campbell, Yvonne B. Capon, G. B. Carruthers, P. J. Carter, Monica L. Chalmers, K. B. Chambers, R. M. Chambers, D. J. Chapman, C. R. Cheadle, G. H. V. Clarke, Mary M. H. Cogman, C. I. Cohen, L. B. Cohen, M. H. F. Coigley, J. J. Conteur, J. B. Cook, J. M. G. Costello, D. D. Cowen, K. Cronin, M. E. S. Cutts, Sylvia Danks, D. O. Davies, O. W. Davies, P. H. Davy, F. E. Dische, J. E. R. Dixon, W. Drawneeek, P. J. Dwyer, C. T. F. Ealand, Violet M. East, R. J. Edney, R. N. M. Eminson, A. J. Evans, D. G. Evans, G. M. Evans, Elizabeth F. Everitt, K. M. Fergusson, J. J. Fingard, L. Ford, M. J. Forth, Joan Y. Fowler-Wright, Joan Frankton, A. Freier, H.-J. B. Galbraith, F. N. Ghadially, H. Goldschmidt, N. G. O. Gourlay, N. F. C. Gowing, C. N. Grainger, K. G. Green, J. S. B. Greenfield, A. B. Haigh, E. G. Hall, J. M. Hall, J. G. Hamilton, B. J. S. Harley, B. J. Harries, J. R. Harries, W. A. Harries, R. A. Harrison, Rosemary Hart, R. M. Harvey, Daphne M. Haynes, J. B. Hearn, Constance M. Hesling, H. B. Hewitt, G. C. Hickie, P. M. Higgins, J. A. Hill, J. M. Holmes, P. J. Horsey, Mary C. Holt, D. E. Howells, C. H. A. Hoy, H. K. Hulme, A. L. Humphrey, R. N. Jackson, S. L. O. Jackson, P. D. James, H. H. Jampel, O. M. Jonathan, Elwynne Jones, R. Ll. Jones, R. K. Jones, H. B. Juby, A. W. Kelly, A. J. Kenny, K. R. P. Kent, W. S. Killpack, L. G. Kiloh, R. A. H. Kinch, R. C. King, J. Knowelden, P. N. Kohiyar, I. S. Kreeger, B. Kustow, E. V. Lambert, B. M. Laurance, N. Lees, A. H. Levy, Adeline G. Lewis, Pamela J. Lockley, Renate M. E. Loeser, H. W. G. Loudon, W. G. G. Loyn, J. D. M. McLaren, J. McLuskie, D. Marrack, J. Q. Matthias, B. W. Meade, René M. Michelmore, I. F. Michie, H. Miller, Barbara E. Mizen, A. Morgenstein, M. F. Moses, J. P. Mostyn, R. F. Naunton, J. Newcombe, J. B. O'Donovan, J. D. Oriel, T. W. Osborn, G. J. Pack, E. S. Perkins, D. E. H. Philips, N. C. D. Pizey, Estella G. Pollock, A. C. Porteous, D. S. Porter, T. A. J. Prankerd, P. E. Prudhoe, R. R. L. Pryer, V. W. Pugh, Emma L. Rachwalsky, I. Ranger, Phyllis Rashbass, I. B. Rees-Roberts, W. C. D. Richards, D. S. Ridley, Kathleen J. Rigg, T. N. Riley, D. A. Road, J. L. Roberts, G. A. Robinson, K. J. Robinson, Mairead M. Robinson, Sonia Rollin, C. Rome, A. D. Rose, C. Rose, G. T. Rutherfoord, G. B. D. Scott, Betty Scotter, Joan Seaman, J. J. Segall, R. D. de A. Seneviratne, R. A. Setchell, G. D. H. Shaw, J. H. Shore, M. Skoblo, Gwendolen D. Smith, I. Sober, S. Sober, Joan E. T. Spong, J. G. Stebbing, Cynthia F. Stephenson, Winifred A. Sterndale-Bennett, H. Stewart, P. Story, T. D. V. Swinscow, B. Taylor, C. Taylor, J. S. Taylor, G. C. Thick, D. C. Thomas, Elizabeth M. Fitz-S. Thomas, W. McL. Thomson, R. B. H. Tierney, Cecily M. Tinker, J. M. Titcombe, C. S. Treip, J. A. Turner, N. A. Walker, G. B. R. Walkey, Pamela E. Warner, C. E. Waterman, S. P. B. Way, Eileen M. Welcher, D. G. Wells, D. G. A. Westbury, Elisabeth M. White, R. J. M. Whittle, Eirian Williams, N. Williams, Elizabeth Williamson, T. A. Williamson, W. S. Wilson, N. E. Winstone, Elisabeth C. W. Withers, Audrey J. Worman, G. A. Wright, Ann Wyatt, Sybil R. Yeates, I. Yentis.

[1] With honours. [2] Distinguished in pathology. [3] Distinguished in hygiene and forensic medicine. [4] Distinguished in medicine. [5] Distinguished in applied pharmacology and therapeutics. [6] Distinguished in surgery. [7] Distinguished in obstetrics and gynaecology.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

The following candidates have been approved at the examinations indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN PUBLIC HEALTH.—W. G. R. Ashley Emile, *Margaret E. R. Balfour, F. Barasi, *J. H. F. Brotherston, H. S. Bury, M. A. Charrett, F. Cockcroft, M. Crowley, H. J. Davies, Cecile R. Doniger, E. N. Dowell, F. H. M. Dummer, V. P. Geoghegan, W. E. Greenwood, Rachel K. Haight, D. L. Harbinson, M. E. M. Herford, E. R. Hodgson Todd, T. P. Howkins, G. O. Hughes, J. P. W. Hughes, S. Hyman, S. Jackson, J. A. MacDonald, A. R. C. Margetts, L. M. Pearce, K. R. D. Porter, M. P. G. Rawlinson, R. Tilley, R. West, J. Ll. Williams.

* Awarded a Mark of Distinction.

ACADEMIC POSTGRADUATE CERTIFICATE IN PUBLIC HEALTH.—Dorothy A. Knox, J. C. McNeilly.

UNIVERSITY OF MANCHESTER

Wilfrid Fletcher Gaisford, M.D., F.R.C.P., at present consulting physician and consulting paediatrician to the Warwickshire County Council hospitals, has been appointed Professor of Child Health in the University.

The following appointments were made at a meeting of the University Council held on May 19: *Lecturer and Director of Anaesthetics Subdepartment*, H. J. Brennan, M.D., D.A. *Lecturer in Gynaecological Pathology*, F. A. Langley, M.Sc., M.B., Ch.B. *Lecturer in Gynaecological Endocrinology*, Annie M. Hain, Ph.D., D.Sc. *Lecturer in Bacteriology*, H. Jackson, M.Sc., Ph.D., M.B., Ch.B. *Assistant Lecturer in Bacteriology*, F. B. Jackson, M.B., Ch.B. *Assistant Lecturers in Radiology*, R. G. Reid, M.B., Ch.B., D.M.R.E., F.F.R., and W. McL. E. Topping, M.B., Ch.B., D.M.R.E. *Assistant Lecturer in Radiotherapy*, G. W. Boden, M.R.C.S., L.R.C.P., D.M.R.

UNIVERSITY OF SHEFFIELD

The following appointments were made at a meeting of the University Council held on May 16: *Full-time Dean of the Faculty of Medicine*, John Gibb McCrie, M.B., F.R.C.P.Ed. *Lecturer in*

Histology, G. L. Hermitte, M.B., Ch.B. *Lecturer in Mental Diseases*, F. T. Thorpe, M.R.C.S., L.R.C.P. *Honorary Demonstrator in Bacteriology*, J. Colquhoun, M.B., Ch.B.

The Council received the resignations of Drs. J. W. Emerson and J. D. Morgan of the posts of demonstrators in anatomy.

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The sixteenth John Mallet Purser Lecture was delivered by Prof. E. J. Conway, M.D., D.Sc., F.R.S., in the Physiology Theatre on May 29. His subject was: "Exchanges of Na, H and K Ions Between the Cell and Its Environment."

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The War Organization of the British Red Cross Society and Order of St. John of Jerusalem have made a grant of £20,000 to the Royal College of Surgeons of England towards the cost of replacing its Museum which was partly destroyed by enemy action. They considered that it would be appropriate to make this gift in recognition of the valuable help to the Red Cross and St. John which has been rendered by the medical profession. The Hospitals and Medical Services Committee had received inestimable help from Sir Alfred Webb-Johnson and Lord Horder as joint chairmen. 250 convalescent homes had been administered and on the testimony of the Services Department they had been administered with conspicuous success.

The following lectures and demonstrations will be given at the College (Lincoln's Inn Fields, W.C.): *Arnott Demonstrations*, June 2, 4, and 6, 3.45 p.m., Mr. H. F. Lunn, The Integument; The Alimentary Canal; and the Pelvic Girdle. June 9, 11, and 13, 3.45 p.m., Mr. R. J. Last, The Pectoral Girdle; The Larynx; and the Kidneys. *Hunterian Lectures*, June 5, 5 p.m., Prof. R. W. Nevin, The Surgical Aspects of Intestinal Amoebiasis; June 12, 5 p.m., Prof. J. Minton, Occupational Eye Diseases and Injuries; June 19, 5 p.m., Prof. F. G. St. Clair Strange, The Place of Plastic Procedures in the Preparation of Amputation Stumps for Limb-fitting. *Ophthalmology Lecture*, June 26, 5 p.m., Prof. A. Sorsby, The Control of Blindness. The lectures are open to those attending courses in the College and to all other medical practitioners and advanced students.

At a meeting of the Council of the College held on May 8 with Sir Alfred Webb-Johnson, President, in the chair, it was reported that Mackenzie McKinnon Research Fellowships had been awarded to H. D. Moore (Bristol) and J. F. Smith (London Hospital). The Hallett Prize was awarded to C. B. R. Mann (University of Queensland).

Redhill County Hospital was recognized in respect of the six months' resident surgical post, tenure of which is required of candidates for the Final Fellowship examination.

Arrangements were made for hospitality to members of the International Society of Surgery during the congress in September.

A Diploma of Fellowship was granted to F. P. Dewar (Toronto).

Diplomas of Membership were granted, jointly with the Royal College of Physicians of London, to the successful candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London in the *Journal* of May 17 (p. 701).

A Diploma in Child Health was granted, jointly with the Royal College of Physicians of London, to V. D. Arora.

Diplomas in Medical Radio-Diagnosis and in Medical Radiotherapy were granted, jointly with the Royal College of Physicians of London, to the following successful candidates:

DIPLOMA IN MEDICAL RADIO-DIAGNOSIS.—J. D. Addison, T. E. Broadbent, A. C. Glendinning, H. J. R. Henderson, B. N. Klukvin, D. G. C. Macdonald, D. R. Morris, D. H. Nelson, R. L. Quilliam, A. C. Rogers, G. A. Stevenson, R. S. Thorpe, F. R. Turner, C. H. Wood.

DIPLOMA IN MEDICAL RADIOTHERAPY.—P. E. S. Palmer.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the College, held on May 6, with the President, Dr. D. Murray Lyon, in the chair, Dr. W. A. Liston (Edinburgh) was introduced and took his seat as a Fellow of the College; Drs. P. M. Wood (Halifax), R. A. Bennett (London), T. E. Elliot (Edinburgh), C. L. Grant (Chislehurst), J. D. Allan (Bothwell), G. M. Greig (Watford), T. F. Rodger (Glasgow), H. Scarborough (Edinburgh), and R. W. Craig, were elected Fellows.

Drs. H. E. Seiler (Edinburgh), J. Siebert (Cape Town), Miss Scott L. Forrest (West Calder), N. A. Rossiter (Ermelo, Transvaal), D. A. Duthie (Bowes, Co. Durham), W. A. L. MacFadyen (Cleveleys), H. A. Reid (Liverpool), D. C. Ross (Kingskettle, Fife), C. H. Davidson (Falkirk), C. G. Robertson (Edinburgh), J. M. Staveley (Palmerston North, N.Z.), A. G. S. Hill (Edinburgh), I. R. C. Batchelor (Edinburgh), A. J. A. F. Al Amari (London), H. N. Robson (Langholm), and B. B. Mukherji (London) were elected Members.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh held on May 15, Mr. James M. Graham, President, in the chair, the following candidates, having passed the requisite examinations, were admitted Fellows:

A. H. A. El Baghdadi, W. E. B. Boscence, G. P. Charlewood, G. R. Clarke, Norah H. C. Clarke, A. D. Cuthbert, G. Degnan, A. C. Duncan, J. G. A. Du Toit, A. T. El-Mansurr, H. C. Fishman, T. G. Fyshe, F. G. Hollands, M. J. Lange, J. E. Leddy, J. T. MacDougall, A. B. McLean, E. B. Z. Masterman, B. B. Ohri, D. Robertson, J. C. B. Sergeant, T. P. Shah, L. G. P. Shiers, S. Skapinker, C. South, R. Y. Stevenson, A. M. Stewart, D. V. Virkar, S. Wassyng, B. W. Wells, T. E. Wilson, B. Winter, J. Wishart, G. N. Wright, R. B. Wright.

The Services

Surgeon Captain H. O. Martin, V.D., R.N.V.R., has been appointed an Honorary Physician to the King in succession to Surgeon Captain F. L. Cassidi, V.D., R.N.V.R., who has been placed on the Retired List.

Captain (now Temporary Lieutenant-Colonel) A. B. Dick and Captain (now Major) R. H. B. McCrae, R.A.M.C., have been awarded the Efficiency Medal (Territorial).

Colonel N. Briggs, C.I.E., V.H.S., I.M.S., has been appointed Honorary Surgeon to the King and Lieutenant-Colonel (Local Brigadier) J. Bennet, R.A.M.C., Honorary Physician to the King in succession to Lieutenant-General Sir J. B. Hance, K.C.I.E., O.B.E., late I.M.S., retired, and Major-General Sir Alexander G. Biggam, K.B.E., C.B., late R.A.M.C. retired, respectively.

LEISHMAN, ALEXANDER, AND PARKES MEMORIAL PRIZE FUND

It is announced that the following prizes are available for award in 1948:

Leishman Memorial Prize (*Silver-gilt medal and approximately* £30).—Open to officers of the R.A.M.C., or officers removed from the Corps but still on the Active List, and officers of the R.A.D. Corps. (Officers must be serving on Regular or Short Service Commissions.) This prize is awarded for the best work in any branch of medicine, surgery, or the allied sciences, or in connexion with the general duties of the R.A.M.C. or the R.A.D. Corps, brought to the notice of the R.A.M.C. Prize Funds Committee during the year, but not necessarily completed within the year.

Alexander Memorial Prize (*Silver-gilt medal and approximately* £70).—Open to officers of the R.A.M.C. as above. Awarded to the officer who by professional work of outstanding merit has done most to promote the study and improvement of military medicine, military surgery, military hygiene, or military pathology during the year. First consideration will be given to original articles or reports of investigations of value from the point of view of military medicine, surgery, hygiene, or pathology, and published in one or other of the various medical journals. Part authorship of an article is not admissible.

Parkes Memorial Prize (*Silver-gilt medal and approximately* £60).—Open to Regular serving medical officers, on full pay, of the Royal Navy, Army, or the Indian Army. Awarded for professional work of outstanding merit which has done most to promote the study of naval or military hygiene. First consideration will be given to articles or reports of investigations of value from the point of view of naval or military hygiene published in one or other of the various medical journals. Part authorship of an article is not admissible.

The Alexander and the Parkes Memorial Prizes are not open to officers on the staffs of the Royal Naval Medical School, the Royal Army Medical College, or the Army School of Hygiene.

Recommendations should be sent in through the usual channels, with copies of original articles or reports of investigations, to reach the honorary secretary, R.A.M.C. Prize Funds Committee, R.A.M. College, Millbank, London, S.W.1., by Dec. 31.

The following prizes have been awarded for 1946: *Parkes Medal and* £60.—Major-General F. Harris, C.B.E., M.C., M.B., B.Ch., late R.A.M.C. For distinguished work in hygiene in India and the Far East. *Leishman Medal and* £30.—Lieut.-Colonel A. D. Young, D.S.O., M.B., Ch.B., R.A.M.C. For a paper on "The Parachute Field Ambulance." *Alexander Medal and* £70.—Lieut.-Colonel W. H. Hargreaves, M.R.C.P., R.A.M.C. For his published work on amoebiasis.

A cancer research laboratory—the Sloan-Kettering Institute—is now being constructed in New York with the help of a $2,000,000 gift from Messrs. Sloan and Kettering of General Motors. Mr. Sloan has provided a further $2,000,000 for research.

Medical Notes in Parliament

The National Health Service (Scotland) Act received the Royal Assent on May 21. Previously, on May 20, the House of Commons had agreed to the amendments made by the Lords in this measure.

THE NATION'S FOOD

Lord CHERWELL, in the House of Lords on May 22, asked what food was available to make up to 2,900 calories a day the domestic rations, which with the domestic entitlement of eight points per week had been stated by the Government spokesman in the House of Commons to amount to 1,600 calories a day. Lord Addison had stated that 2,900 calories a day were obtainable by persons not using restaurants and canteens. He was sure Lord Addison was anxious that any trace of unfairness toward a member of his profession should be put right. Lord Addison had complained that the figures given by Dr. Bicknell in the *Medical Press* were incorrect by about 30%. The issue was whether Dr. Bicknell was right in stating that the amount to be derived from unrationed foods, excluding restaurant meals, was about 500 calories a day, bringing the total up to 2,100 calories, or Lord Addison, when he stated that the normal man or woman, with access to restaurant or canteen, could bring the total up to 2,900. According to the Minister of Food, his Department's *Dietary Food Survey* showed that the food eaten in the home in December, 1945, was equal to 2,390 calories. In November, 1946, it was 2,320 calories; in December, 1946, 2,300 calories. No later figures had been published. The decline was lamentable and steady. Dr. Bicknell's 2,100 calories was within 9% of the figure given by the Minister of Food. Lord Addison had protested against a statement by Dr. Bicknell that the unemployed before the war were better fed than most of the nation to-day. Lord Cherwell believed this to be broadly true. Ten years ago Sir William Crawford and Sir Herbert Broadley found that the diet of the two poorest social groups, those with incomes under £249 a year, fell short of the standards prescribed by the British Medical Association. But even in the lowest social group, with an income of less than 12s. 6d. per head per week, the average calories were given as 2,335 per head per day, 35 calories above the Ministry of Food December figure for the normal consumer to-day who had not access to restaurants, canteens, and the like. In 1934 Sir John Boyd Orr concluded that the poorest 10% of the population obtained 2,317 calories a day. These figures justified Dr. Bicknell's statement that the unemployed before the war were better fed. Sir William Crawford's investigations showed that the poorest 15% of the population obtained 65% more meat, 80% more bacon, 46% more fats, and 90% more sugar than the rations allowed to-day. By the League of Nations standard the whole of this nation was to-day on the poverty line. That a small percentage of the population might get slightly more food than formerly did not outweigh the fact that an overwhelming majority were getting much less.

Lord ROTHSCHILD said a satisfactory diet included other vital ingredients beside calories. In 1942 the combined United Kingdom, United States, and Canadian Consumption Levels Inquiry Committee concluded that the method used by the Ministry of Food in arriving at the figure of 2,900 was the best available. They concluded that an attempt to weight the statistics would increase the risk of error. The method by which the figure of 2,900 had been reached in 1947 was identical to that used in the pre-war period to get similar data.

Dietary Changes

Lord ADDISON said the figure of 2,900 calories was arrived at by dividing the total quantity of food going into consumption by the total population. The comparable figure for the pre-war period, ascertained in the same way, was 3,000 calories. The total consumption of meat was to-day about 9% less than pre-war. Fats were down by 29%, sugar by 26%, and eggs by 14%. Consumption of dairy products, especially milk, was up by 30%; fresh fish had increased by 28% and flour by 10%. Consumption of potatoes had increased by 64%. While the diet had become duller it approximated more closely to the nutritional foundation on which it should be based—dairy produce, vegetables, and high-extraction bread. The average of 2,900 calories covered not only "straight" rations and points rations, but also differential rations for heavy manual workers, unrationed foods, welfare foods for children, and so on. The "straight" basic rations gave 1,400 calories to the ordinary adult and the points rations another 200 calories. This allowed nothing for bonus issues of sugar and jams or for manufactured products such as meat pies and sausages. It did not cover the sweets ration. As extra sources of food, some 164,000 catering establishments provided some 59,000,000 main meals weekly. The requirements of the people as a whole were being adequately met. There was evidence that the classes which before the war suffered from malnutrition were, on the whole, better fed to-day. Lord Addison remarked that he did not withdraw one word which he had previously said. The statement attributed to "this man" that England was dying of starvation was a falsity, sloppy, inaccurate, and altogether mischievous.

Lord WOOLTON said the writer of the article was a medical scientific authority higher than any other quoted. He had used the phrase "dying of starvation" in a strictly technical sense and it was true. The nation was, in fact, starving for fats.

Lord CHERWELL pointed out that to get 1,300 calories from fish the consumer would have to eat 100 oz.; or from potatoes 5 lb.; or from cabbage over 200 oz. A total of 59,000,000 main meals per week served in canteens and restaurants was only 1¼ meals per head of the population per week. He thought the additional consumption of milk compared with before the war was likely to be only 20%, not an increase of 144% as estimated by Mr. Strachey or of 30% as Lord Addison had said. If there was enough bread to produce 90 oz. a week why was the ration only 63 oz.?

The debate then closed.

Food Comparisons

Mr. STRACHEY, in answer to Mr. Spence on May 12, said the number of calories available to civilian consumers per head per day in the United Kingdom in 1946 was 2,890—not, as had been erroneously stated, 2,100. The consumption of some individual foods in 1946 expressed as a percentage of their pre-war consumption was as follows: liquid milk 144%, eggs (shell, dried, and liquid) 87%, flour and grain products 115%, all vegetables 110%, tea 96%, oils and fats (excluding butter) 105%, butter 44%, bacon 55%, all other meats 93%, fish 120%, sugar (including sugar in all home-produced manufactured foods) 72%, potatoes 161%. The nutrient intake for 1946, compared with pre-war, showed about 4% less calories, 12½% more total protein but 3% less animal protein, 14% less fat, and about the same carbohydrate. This not very dissimilar quantity of food was in 1946 far more equitably distributed among the population than it used to be before the war. The quantity and quality of food which could be bought by large sections of our people before the war were far too low. The Ministry of Food would need to raise them substantially and as soon as possible in order to achieve a really satisfactory national diet.

Mr. STRACHEY, on May 12, also furnished the following table:

Estimated Average Supplies Moving Into Civilian Consumption in the United Kingdom in 1946

	Nutrients per head per day
Calories	2,890
Protein—animal	44.1 gm.
—vegetable	46.0 „
—total	90.1 „
Fat	112.0 „
Carbohydrate	381.1 „
Calcium	1,043 mg.
Iron	17.2 „
Vitamin A	3,738 I.U.
Ascorbic acid	107.5 mg.
Thiamin	1.88 „
Riboflavine	2.00 „
Niacin	17.3 „

Notification of V.D.—Mr. WESTWOOD told Sir Thomas Moore on May 6 that he was not satisfied that making venereal diseases compulsorily notifiable in Scotland would help in eradicating them. The question had been carefully considered from time to time, and so far as Scotland was concerned the balance of opinion had been that compulsory notification might hinder the campaign which the doctors, the Government, and the local authorities waged against these diseases. Sir Thomas Moore spoke of the danger of infection to young children with an infected person in charge of them and gave notice that he would raise the subject on the adjournment.

Category E.—Approximately 109,000 men were discharged from the Army between September, 1939, and VJ Day on psychiatric grounds; 288,000 on account of other diseases and accidental injuries; 26,000 on account of injuries due to enemy action.

Hearing Aids.—The Minister of Supply has already placed contracts for the manufacture of aural aids. He hopes that enough will be available to make a start with distribution when the National Health Service begins. They will then be available without charge to patients for whom they are prescribed.

No. 19

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 10.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	74	3	19	1	—	61	3	21	1	3
Deaths		2	—				1	1		
Diphtheria	194	24	55	18	7	368	30	82	33	11
Deaths	1	1	2	—	—	9	2	—	—	—
Dysentery	110	7	18	—	—	137	16	48	1	2
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	—	—	—	3	—	1	—	—
Deaths		1					—			
Erysipelas			36	6	1			39	6	3
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years	95	14	16	29 7	3	48	7	7	31 17	3
Deaths										
Measles*	10,134	499	157	52	28	2,570	928	809	69	5
Deaths	5	—	1	—	—	—	—	3	—	—
Ophthalmia neonatorum	73	4	12	—	—	73	10	19	—	—
Deaths										
Paratyphoid fever	3	1	—	—	—	1	—	1 (B)	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	561	25	5	7	4	445	28	6	3	5
Deaths (from influenza)†	10	—	1	—	1	8	—	2	1	—
Pneumonia, primary			183	21				187	31	
Deaths		42		9	3		28		13	8
Polio-encephalitis, acute	2	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	12	2	—	5	—	3	—	1	—	—
Deaths		—					—			
Puerperal fever		2	9		—		2	11		1
Deaths										
Puerperal pyrexia‡	151	14	12	1	3	123	12	17	1	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,002	79	129	21	29	1,022	67	127	15	25
Deaths	—	—	—	—	—	1	—	—	—	—
Smallpox	2	—	—	—	—	2	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	6	—	2	3	—	9	—	1	1	—
Deaths	1	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,222	300	225	40	12	2,180	160	115	34	18
Deaths	15	2	3	4	2	9	3	—	2	—
Deaths (0–1 year)	437	61	92	41	21	353	38	52	53	14
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,769	742	646	235	138	4,301	676	551	210	135
Annual death rate (per 1,000 persons living)			13·4	14·8				12·1	13·5	
Live births	10,106	1546	1242	574	301	8,366	1241	1055	468	294
Annual rate per 1,000 persons living			25·0	36·2				21·2	30·0	
Stillbirths	263	31	33			276	38	30		
Rate per 1,000 total births (including stillborn)			26					28		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Smallpox

Contacts are still under surveillance in connexion with the outbreaks of smallpox at Barnsley and Sheffield, West Riding, and at Bilston and Coseley, Staffordshire.

Barnsley.—The source of infection at Barnsley has not yet been determined with certainty, but a man who had been exposed to smallpox in a common lodging-house at Scunthorpe and was at the time revaccinated successfully (April 5) arrived at the Barnsley lodging-house on the evening of April 30. Among innumerable marks of acne, scabies, and trauma on his body was one pock mark suggestive of variola six or more weeks ago and half a dozen nondescript scars which might have been modified smallpox. Attempts to culture variola virus from him have failed. He has been notified as smallpox and is in hospital. In addition to the man removed from Bermondsey on May 16 there are now 5 cases in the first generation arising at Barnsley: 3 of these were mentioned last week (May 24, p. 748); the remaining 2, both males, aged 68 and 70, developed rashes on May 17 and 19. It is doubtful whether the man from Scunthorpe could have infected the earliest case in this generation, who is recorded as having had a pustulo-vesicular rash when he was admitted to a general ward at St. Helen's Hospital, Barnsley, on May 13. He remained there until he was removed to the smallpox hospital on May 16. There were 93 men, women, and children sleeping in the Barnsley lodging-house when the disease was detected there on May 16. Of these, 5 absconded, but only two (Elizabeth Fenton and Lewis Stewart) remained untraced. Assuming that the period of infection at Barnsley began about April 26, several contacts had left before surveillance started and are still untraced. One of them, a man named Thomas Durkin, was also a contact with smallpox at Grimsby. Any news concerning his whereabouts should be communicated immediately to Whitehall 4300, extension 145. The disease at Barnsley is variola major of a severe type: 2 of the patients have died.

Sheffield.—The father and aunt of the original case have been removed to hospital. The father, successfully vaccinated for the first time on May 5, sickened on May 13 and developed a markedly modified smallpox rash on May 18. The aunt is at present a suspect only.

Bilston.—A new case has been removed to hospital—an unvaccinated child aged 11 with onset on May 16 and a rash which appeared on May 19. She lived in a house near that occupied by the cases removed in April.

Coseley.—An unvaccinated kitchen-maid at Moxley Infectious Diseases Hospital became ill while at her home in Coseley on May 13. A severe confluent eruption appeared on May 15.

Discussion of Table

In *England and Wales* infectious diseases were more prevalent. Increases in the number of notifications were reported for measles 1,692, whooping-cough 189, scarlet fever 129, acute pneumonia 45, and cerebrospinal fever 22. Dysentery with 12 fewer cases was the only disease to show a fall in incidence during the week.

The rise in the notifications of measles was fairly general, but large increases were recorded from only a few counties, notably Yorkshire West Riding 627, Staffordshire 246, London 136, and Middlesex 87. The increase in cases of whooping-cough was mainly confined to the neighbourhood of London; the largest increases were Middlesex 69, London 50, and Kent 37. The only change of any size in the local trends of scarlet fever was a rise of 57 in Lancashire. Notifications of diphtheria increased by 9 in Lancashire and by 8 in London. Lancashire had 72 cases of dysentery, almost two-thirds of the total for the country (Prestwick M.B. 40, Liverpool C.B. 18, St. Helens C.B. (10).

In *Scotland* infectious diseases, in contrast to the trend in England and Wales, tended to decrease. The falls in notifications included measles 73 and whooping-cough 30, while the only increases of note were acute primary pneumonia 17 and diphtheria 15.

In *Eire* increases were reported for diarrhoea and enteritis 11, measles 7, and diphtheria 6. There was a decrease of 15 in the notifications of whooping-cough.

In *Northern Ireland* the only changes were increases in the notifications of measles 8 and diphtheria 5.

Week Ending May 17

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,028, whooping-cough 2,120, diphtheria 243, measles 12,678, acute pneumonia 578, cerebrospinal fever 57, dysentery 65, acute poliomyelitis 11, paratyphoid 3, typhoid 9, smallpox 12.

Medical News

The Chelsea Clinical Society, one of the youngest medical societies in London, was founded in 1897, and its first President was Dr. J. Foster Palmer. It originally consisted of only 15 members, all of them resident in the south-west district of London. They met together once a month in a dispensary in Chelsea and at these informal meetings it was a tradition that whisky should be provided. Membership grew until in 1909 there were 126 members; a year later the Society held its meetings in the students' clubroom of St. George's Hospital. After 1922 the business of the Society was conducted at dinner meetings, and membership rose to 230. The President's Jewel was presented by Dr. T. W. Parkinson, later Sir Thomas Parkinson; a Silver Bell was presented by Dr. Gordon Lane, and is used by the President to call to order any member thought to have spoken too long; the President has another disciplinary instrument in the shape of an Ivory Gavel and Block. The Chelsea Clinical Society celebrated its Jubilee at a dinner last week presided over by the President of the Society, Dr. Ronald Jarman. The Earl of Clarendon, who was the principal guest of the evening, paid a personal tribute to the medical profession when proposing the health of the Chelsea Clinical Society. He congratulated the Society on its present prosperity and mentioned the fact that its membership was now over 200. In response, Dr. Jarman thanked the Presidents of the various medical societies and especially the Presidents of the Royal Colleges for "rallying round the Chelsea Clinical Society on the occasion of its Jubilee." Sir Cecil Wakeley proposed the toast of the guests and Mr. Russell Vick, K.C., and Sir Hugh Lett, Bt., suitably replied.

A science meeting of the Colour Group of the Physical Society will be held at the Lighting Service Bureau, Electric Lamp Manufacturers' Association, 2, Savoy Hill, London, W.C., on Wednesday, June 4, at 3.30 p.m., when Mr. H. G. W. Harding will read a paper on "The Colour Temperature of Light Sources."

Owing to indisposition Sir John Fraser will be unable to be present at the first post-war dinner of the Edinburgh University Club of London on June 5, announced in this column last week at p. 749. Sir Henry Wade will reply for the University. Among other acceptances are Admiral Lord Cunningham and Field-Marshal Lord Wilson. The dress for the evening will be tails or dinner jackets. Any member who has not yet received notice should write the honorary secretary at 12, Wimpole Street, London, W.1.

A meeting of the Faculty of Homoeopathy will be held at the London Homoeopathic Hospital, Great Ormond Street, London, W.C., on Thursday, June 5, at 5 p.m., when Dr. J. D. Kenyon will read a paper entitled "Comments on the Homoeopathic Treatment of Diabetes."

Mr. L. H. Savin will deliver a lecture on "Cataract" before the Whipps Cross Hospital Medical Society on Friday, June 6, at 8.30 p.m.

The annual general meeting of the Association of Orthopaedic Physiotherapists will be held on Saturday, June 7, at 2.30 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., when Brig. R. J. Furlong, F.R.C.S., will speak on "The Spine and its Physical Treatment."

Prof. H. E. Sigerist will retire in June from the Chair of Medical History and the Directorship of the Institute of the History of Medicine at Johns Hopkins University, Baltimore. After studying at Zürich, University College, London, and Munich, and gaining his M.D.Zürich in 1917, Prof. Sigerist was appointed lecturer on the history of medicine at Zürich and later professor of that subject at Leipzig University. He went to Johns Hopkins University in 1931. Prof. Sigerist intends to settle in Switzerland and write a history of medicine throughout civilization.

The summer week-end course arranged by the Empire Rheumatism Council (Tavistock House (North), Tavistock Square, London, W.C.) will be held at the Apothecaries' Hall, Blackfriars Lane, Queen Victoria Street, London, E.C., on Friday, Saturday, and Sunday, June 13, 14, and 15. On June 13, at 4.30 p.m., Sir Adolphe Abrahams will deliver the inaugural lecture and at 5.30 p.m. Dr. Ernest Fletcher will speak on "Arthritis." The programme for June 14 is as follows: 10 a.m., Dr. R. E. Bonham-Carter, "Juvenile Rheumatism and Still's Disease"; 11.15 a.m., Dr. G. D. Kersley, "Spondylitis"; 2 p.m., Dr. George Graham, "Gout"; 3 p.m., Dr. W. S. C. Copeman, "Non-articular Rheumatism and Sciatica"; and 4.30 p.m., Dr. Oswald Savage, "Differential Diagnosis of Arthritis." On June 15, at 10 a.m., Dr. F. S. Cooksey will speak on "Physical Treatment in the Rheumatic Diseases" and at 11.15 a.m. Mr. W. D. Coltart will discuss "Orthopaedic Aspects of the Rheumatic Diseases." The fee for the course is £1 1s. and the number of entries is limited to 50. Applications to join should be sent to the General Secretary of the council at the above address.

The Société des Médecins Inspecteurs des Ecoles de la Seine and the Société Française d'Hygiène Scolaire have arranged a conference on health in the school and the university to be held from June 25 to 29 at the Faculty of Medicine, University of Paris, under the patronage of the French Ministries of Education and Health. Plans are being made for visits during the conference to schools, dental-care institutes and centres of educational psychology. Visitors will also be able to attend physical education demonstrations organized by the conference of the League of Physical Education, which will take place during the same dates as the health conference. A joint meeting of the two conferences will be held at the Sorbonne. Those wishing to attend should write as soon as possible to Dr. Astre (Direction de l'Hygiène Scolaire, 5, Rue Auguste Vacquerio, Paris, VIIIe), from whom full particulars as to fees, etc., can be obtained.

Dr. Jerzy Chorobski, lecturer in neurosurgery in the University of Warsaw, has arrived on a visit to this country under the auspices of the British Council. He is visiting hospitals and medical institutions in London, Manchester, Edinburgh, Oxford, and Cambridge. Before the war Dr. Chorobski held a Rockefeller Foundation Fellowship and worked in neurosurgical centres in London and in America.

Dr. G. T. Badenski, professor of pathology in the University of Temisoara, Rumania, who has been doing research work on virus diseases, including influenza, has arrived on a visit to this country, under the auspices of the British Council. He will be mainly engaged in research studies at the Malaria Laboratory, Horton Hospital, Epsom, but will also visit universities, research institutions, and hospitals in London, Liverpool, Manchester, and Sheffield.

Sir Alexander Fleming has been awarded the American Order of the Purple Heart for his work on penicillin, which saved so many lives during the war.

Dr. Kenneth Mellanby, reader in medical entomology in the University of London, has been appointed Principal-designate of the University College which it is proposed to establish in Nigeria. Dr. Mellanby, who was born in 1908 and educated at Barnard Castle School and King's College, Cambridge, has carried out research work at the London School of Tropical Medicine and Hygiene and in East Africa. In 1945 he was awarded the O.B.E. "for distinguished services in connexion with the preservation of the health of our troops in South-East Asia." Recently Dr. Mellanby went over to Nuremberg to report on the war crimes trials in which German medical men were involved. His account of "Medical Experiments on Human Beings in Concentration Camps in Nazi Germany" appeared in our issue of January 25, 1947, at p. 148.

The Royal College of Obstetricians and Gynaecologists, which was founded as a company without share capital eighteen years ago, has now received its Royal Charter dated from March 21.

The Royal National Orthopaedic Hospital at Stanmore has recently instituted a 24-hour accident service. Accidents of all types, particularly those of industrial origin, are being dealt with. This new development is part of the hospital's policy in widening its scope and function so as to provide full training for post-graduates in all branches of orthopaedic surgery. The telephone number of the hospital is Grimsdyke 1894.

Prof. R. E. Lane, of Manchester University, has been appointed a member of a committee set up by the Minister of National Insurance under the chairmanship of Judge Edgar T. Dale to review the policy adopted in scheduling industrial diseases under the Workmen's Compensation Acts, and to advise on the principles that should govern the selection of diseases for insurance under the National Insurance (Industrial Injuries) Act. Those interested are invited to submit evidence in writing to the Secretary, Mr. F. K. Forrester, Ministry of National Insurance, 6, Curzon Street, London, W.1.

President Truman has asked Congress to give immediate attention to the enactment of a national health and disability insurance scheme, which should include adequate public health services, additional medical research and medical education, more hospitals, insurance against the costs of medical care, and protection against loss of earnings during illness.

The Freedom of the Borough of Buxton was on May 30 conferred on Dr. C. W. Buckley, Alderman of the Borough.

Dr. Frederick Reiss, formerly Professor of Dermatology at the National Medical College and St. John's University Medical College, Shanghai, China, and recently of Cornell Medical College, has been appointed Associate Clinical Professor in the Department of Dermatology and Syphilology, New York University College of Medicine.

Dr. William Dyson, O.B.E., consultant to the Manchester Hospital for Skin Diseases, who died on Feb. 5, left £9,326. Sir Harry Linnington Martyn, K.C.V.O., late Surgeon Apothecary to H.M. Household at Windsor, who died on Jan. 7, left £10,110.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Treatment of Muscular Rheumatism

Q.—*A patient with muscular rheumatism or fibrositis of the shoulder has been treated with an autogenous vaccine consisting of non-haemolytic streptococci and mixed staphylococci taken from a throat swab. Is there any rationale for this form of treatment, and is it worth while continuing it?*

A.—Vaccine treatment is rarely of any use in cases of this type, though sometimes a septic tonsil may be the cause. Cases have been reported of an acute periarthritis of the shoulder apparently infective and endemic or epidemic in some districts; they tend to clear up in a few weeks. Mild trauma is often responsible, especially in cases of occupational origin leading to irritation of the cords of the brachial plexus from tension of the scaleni, often associated with a cervical rib or large transverse process. Thorough clinical investigation and *x*-ray examination are necessary to find the cause. Treatment of septic tonsils is called for, possibly tonsillectomy; local *x*-ray treatment has been strikingly effective in some cases. A sling should be worn to rest the muscles; infra-red rays followed by light massage or ionization with histamine, or salicylates, are other useful forms of treatment.

Penicillin for Hand Infections

Q.—*What is the indication for penicillin therapy in local staphylococcal infections of the hand? To what extent does it replace surgery? Should injections be started before or at the time of pus formation?*

A.—Penicillin therapy is indicated in every case of infection of the hand except the most trivial. This should be started at the earliest possible moment, as by this means many staphylococcal infections will be aborted and the dire streptococcal infections prevented. So serious are the after-results (functionally, aesthetically, and economically) of hand infections—even those that at first sight appear minor—that too much stress cannot be laid on the prophylactic side of treatment, and in this respect penicillin provides an invaluable weapon. If hospital treatment is not indicated or possible (where intensive dosage can be provided) massive daily doses of about 250,000 units should be given parenterally until the local condition has resolved. If pus has actually formed (for example, pulp abscess) incision will still be necessary, but local penicillin dressings (powder or ointment) after the early post-operative effusion has settled will greatly expedite healing. It cannot, therefore, be said that penicillin therapy has entirely replaced surgery in hand infections, but it has, except in neglected cases, limited it to the drainage of local collections of pus and it has removed the dread of the dire sequelae.

Tuberculin Tests

Q.—*What is the technique of the Mantoux test? Is there any danger if an active focus is suspected, and should precautions be taken? I should also like particulars of the patch test.*

A.—The Mantoux test consists in the introduction of a certain known quantity of tuberculin intradermally to determine hypersensitivity to tuberculo-protein. The technique of the test has been laid down in detail in the supplement to the Ministry of Health circular 166/45, dated Sept. 28, 1946. It is carried out by injecting intradermally, with a sterile tuberculin syringe and No. 29 needle, 0.1 ml. of 1/10,000 solution of old tuberculin (O.T.) or 0.0002 mg. of purified protein derivative (P.P.D.). The injection is usually made on the flexor surface of the forearm after cleaning the area with alcohol. If no reaction is obtained after two hours a further injection is made of 0.1 ml. of 1/1,000 solution of O.T. or 0.005 mg. of P.P.D. If there is still no reaction, after a further lapse of 72 hours a third test is made with 0.1 ml. of 1/100 O.T. The reaction should be read 48 hours after the injection. A positive reaction is indicated by an area of swelling 5 mm. or more in diameter. Any swelling less than 5 mm. across or simple redness of the skin should be considered as negative. Except in very sensitive individuals, in whom it may produce a severe local reaction, the test is harmless. No permanent disability has been known to occur, and in the large majority of instances the local reaction causes no discomfort. The main precautions consist in giving careful attention to technical details, particularly with regard to sterility, and the use of freshly prepared tuberculin.

The patch test is the determination of skin sensitivity to tuberculo-protein by the transcutaneous method. The patch consists of a strip of adhesive tape on which is placed a square of filter-paper saturated with O.T. The test material, if kept in a cold dry place, will remain reliable for six months. It is important to see that the skin is thoroughly cleaned with ether or acetone before applying the test. In some definitely positive cases the result may not be readable until after five or six days, but usually a reaction is present in 72 hours in positive cases. The site of choice for the patch test is the skin area between the scapulae just right of the midline. This test is rather less sensitive than the Mantoux test, but is useful in infants and small children, who may be frightened by the intradermal method. Occasionally in a sensitive patient the reaction is great and even vesiculation may occur. It may take two to three weeks to fade.

Acrocyanosis

Q.—*A healthy well-built girl of 11 has had very marked but painless cyanosis and swelling of the hands and feet during the last four winters. There are no familial tendencies to the condition. What treatment do you suggest?*

A.—Acrocyanosis is not rare at this age and in this sex. The majority of girls suffering from this condition acquire a normal circulation in the skin of the extremities after puberty; thus there is no indication for radical treatment at this age. The hands and feet should be kept warm with thick woollen gloves and stockings during the cold weather and the nutrition of the skin should be carefully preserved. If acrocyanosis persists when the patient has reached 19–20 years and is causing discomfort, a full investigation is called for and sympathectomy might be considered.

Sterilization of Glass Syringes

Q.—*An article recently gave instructions for wrapping all glass syringes in kraft paper or "cellophane" before sterilizing in a hot-air sterilizer or autoclave. I understand that cellophane is impervious to steam; how then is sterilization attained by this method?*

A.—Wrapped all-glass syringes should always, if possible, be sterilized in a dry oven at 160° C. for one hour. Kraft paper is somewhat more permeable by steam than cellophane, and, if a good vacuum is obtained in the autoclave, steam will in any case get inside the wrapping between its layers. What is more serious is that steam cannot permeate the interior of the syringe itself, especially if this is lubricated with liquid paraffin. Autoclaving an assembled syringe is thus tantamount to sterilization by dry heat at the temperature employed—say 120° C. This is likely to destroy any but sporogenous organisms, but cannot be regarded as a dependable method of absolute sterilization.

Induction by Drew Smythe Catheter

Q.—*Please describe in detail the technique for using the Drew Smythe catheter in induction of labour.*

A.—With the patient in the lithotomy position the vulva, vagina, and cervix are cleansed and painted with an antiseptic solution. Two fingers of the left hand are then inserted into the vagina and the first finger is passed through the cervix. Previous dilatation of the cervix is usually unnecessary. The catheter, with the stylet withdrawn, is held in the right hand and its tip guided through the cervix along the finger of the other hand. It is passed between the membranes and the uterine wall behind the presenting foetal head. When the tip

is just above the curve of the foetal head, and pointing forwards towards the foetal neck, the stylet is pushed in and the membranes punctured. The liquor flows back through the catheter, and at least 500 ml. should be withdrawn to ensure the induction of labour. The catheter is then taken out and labour usually begins within forty-eight hours. Opinion is divided as to whether the patient should be given an anaesthetic. It is sometimes essential in primigravidae, and in a multiparous patient it has the advantage that it permits a more thorough cleansing of the vagina.

Ejaculatio Praecox

Q.—*What advice should be given to a healthy man aged 30, newly married, who ejaculates prematurely? There is a previous history of masturbation.*

A.—Ejaculatio praecox is often said to be due to a man's being "too keen"; but, in fact, it is found to be of the same nature and to have the same motive as sexual impotence—namely, a subconscious unwillingness to have intercourse, which is therefore prevented by the premature ejaculation. This inhibition is often due to an early engendered fear of sex. Masturbation as such does not produce it, but in so far as masturbation is an expression of self-love it inhibits love for the partner and may therefore be an important factor. Apart from this, some boys are often threatened with the consequences of sex, which threat may remain subconsciously although it may be discarded consciously, while others are told that masturbation leads to impotence and other disorders, and this may have a deterrent effect by suggestion. Early circumcision is in many cases the inhibiting factor, especially when it is regarded as a punishment for sex. Fortunately, if the matter is taken calmly, and love for the wife, in its true sense, is encouraged, leaving the sex side to take care of itself, the condition usually resolves in time. If not, analytical treatment to discover and get rid of the cause should be advised.

Receding Gums

Q.—*How can recession of the gums be prevented?*

A.—Recession of the gums with advancing years appears to be one of the penalties derived from civilized diet, and disuse of, and lack of friction on, the gums appear to make them more liable to infection, with gradual loss of the supporting tissues. Treatment should aim at keeping up the tone of the gingival tissues by massage, with careful scaling, and cauterization of pockets or gingivectomy in order to eliminate any sepsis.

Books on Psychology

Q.—*Can you recommend an elementary book on psychology?*

A.—Perhaps the best simple book on pure psychology is Woodworth's *Psychology*. If, however, an elementary knowledge of medical psychology is required the question is more difficult to answer, because there is such a variety of approaches and no textbook has been written. We should therefore suggest going to the source of modern psychopathology and reading Freud's *Papers on Hysteria*, which shows how he came to discover the importance of conflict, repression, and wish-fulfilment in the neuroses, and then Freud's *Introductory Lectures on Psychoanalysis*. Later authorities—such as Jung's *Analytical Psychology*, Adler's *Neurotic Constitution*, McDougall's *Normal Psychology* and *Abnormal Psychology*—can be better understood when a start has been made on these.

Cystine Stones

Q.—*Large cystine stones were removed from the kidney of a girl aged 4; stones are also present in the other kidney. It is said that cystine stones can be dissolved with suitable diet. Could you please supply full details of this treatment?*

A.—Cystinuria is due to a hereditary abnormality in metabolism, and we know of no diet which will prevent the formation of cystine crystals in a patient who suffers from this condition. Nor are we aware of any method by which cystine stones can be dissolved after they have formed.

Letters and Notes

Penicillin Snuff for Colds and Sore Throats

Dr. H. F. BARNARD (Beverley, E. Yorks) writes: Dr. J. F. Buckmaster (April 5, p. 476) has drawn attention to his work showing that penicillin snuff "materially shortened and mitigated the common cold by reducing secondary bacterial invasion." Our experience at Beverley Emergency Hospital is in agreement with this, and competent opinion elsewhere has expressed the same view. It is not commonly realized that penicillin snuff is valuable in the treatment of sore throats (Meadley, R. G. S., and Barnard, H. F., *Lancet*, 1946, **1**, 87). A dose of 1,000 units maintains an adequate bacteriostatic concentration in the pharynx for up to four hours. The film of snuff-coated mucus is slowly swept back by the ciliated epithelium of the nose to the pharynx and posterior surface of the tongue. Involuntary swallowing movements then bring it forward to the fauces, and tracing this flow with methylene blue shows that the posterior pharynx in particular is reached. After thus demonstrating its possibilities a series of sore throats in R.A.F. personnel were treated in bed. Penicillin snuff was given to alternate cases, the others acting as controls. The snuff-treated cases showed a shorter period of disability and more rapid clearance of pathogenic bacteria. Penicillin lozenges, gelatin pastilles as advocated by Drs. A. B. MacGregor and D. A. Long (Feb. 1, p. 197), or chewing-gum introduced by McIntosh, C. F., and Perryman, P. W. (*Pharm. J.*, 1946, **157**, 354), are indicated in buccal infection. In conclusion I would like to draw attention to the simplicity of this four-hourly-snuff method of achieving prolonged antiseptic activity in the upper respiratory tract. A small piece of paper is folded obliquely and from this is tipped and sniffed into each nostril as much powder of penicillin in sulphathiazole, 10,000 units per gramme, as will stand in a 1-cm. circle.

Cider and Rheumatism

Prof. B. T. P. BARKER (University of Bristol Agricultural and Horticultural Research Station, Long Ashton) writes: Under the heading "Any Questions?" (April 12, p. 515) an inquiry was made as to the grounds, if any, for the current belief that cider drinkers do not suffer from rheumatism of the arthritis type. In the reply given it was stated that salicylic acid is often added to cider, sometimes in very large amount, and this may be the origin of the idea. To prevent any misconception and possible harm to the cider industry of this country I wish to point out that neither salicylic acid nor any preservative other than sulphur dioxide is permitted in this country for addition to ciders. The maximum quantity of sulphur dioxide allowable is 14 gr. (0.9 g.) per gallon—i.e., 200 parts per million or 0.02%. The regulation has now been in force for many years.

Treatment of Post-herpetic Pain

Dr. N. N. TERESHCHENKO (Wandsworth) writes: I am surprised that in your answer to the question on the treatment of post-herpetic pain (April 26, p. 585) you do not mention parenteral liver extract injections. This method was first described in your *Journal* (1946, **1**, 942; **2**, 38). I had the opportunity to use it twice, each time with a dramatic result, the pain disappearing within twelve hours.

Correction

In the paper entitled "Occupied Holland" by Dr. Henriette A. Lohr, published in the *Journal* of April 19, we omitted her reference to the work on "hunger osteopathy" done by Dr. Pompen, Dr. Groen, Dr. la Chapelle, and Dr. Mercx. Dr. Lohr's observations on this were taken, by permission, from a monograph by these authors which is now published in Holland, and she is anxious that the description of this new clinical entity should be properly attributed to the above-named authors. Dr. Lohr's paper as published in the *Journal* was a much abridged version of an address given last September to the London Association of the Medical Women's Federation.

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